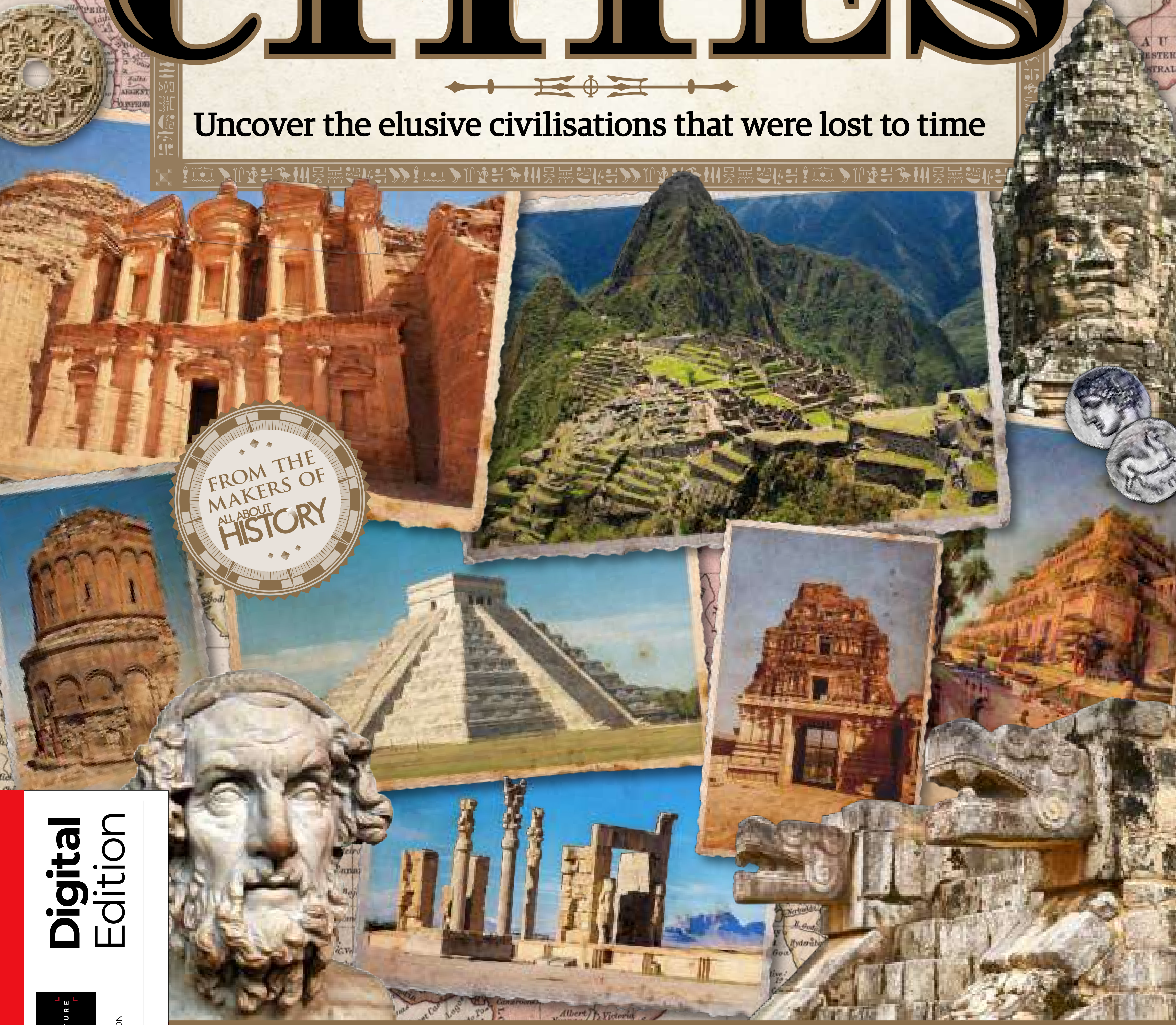
NEW

Ancient History's
LOST CITIES

Uncover the elusive civilisations that were lost to time



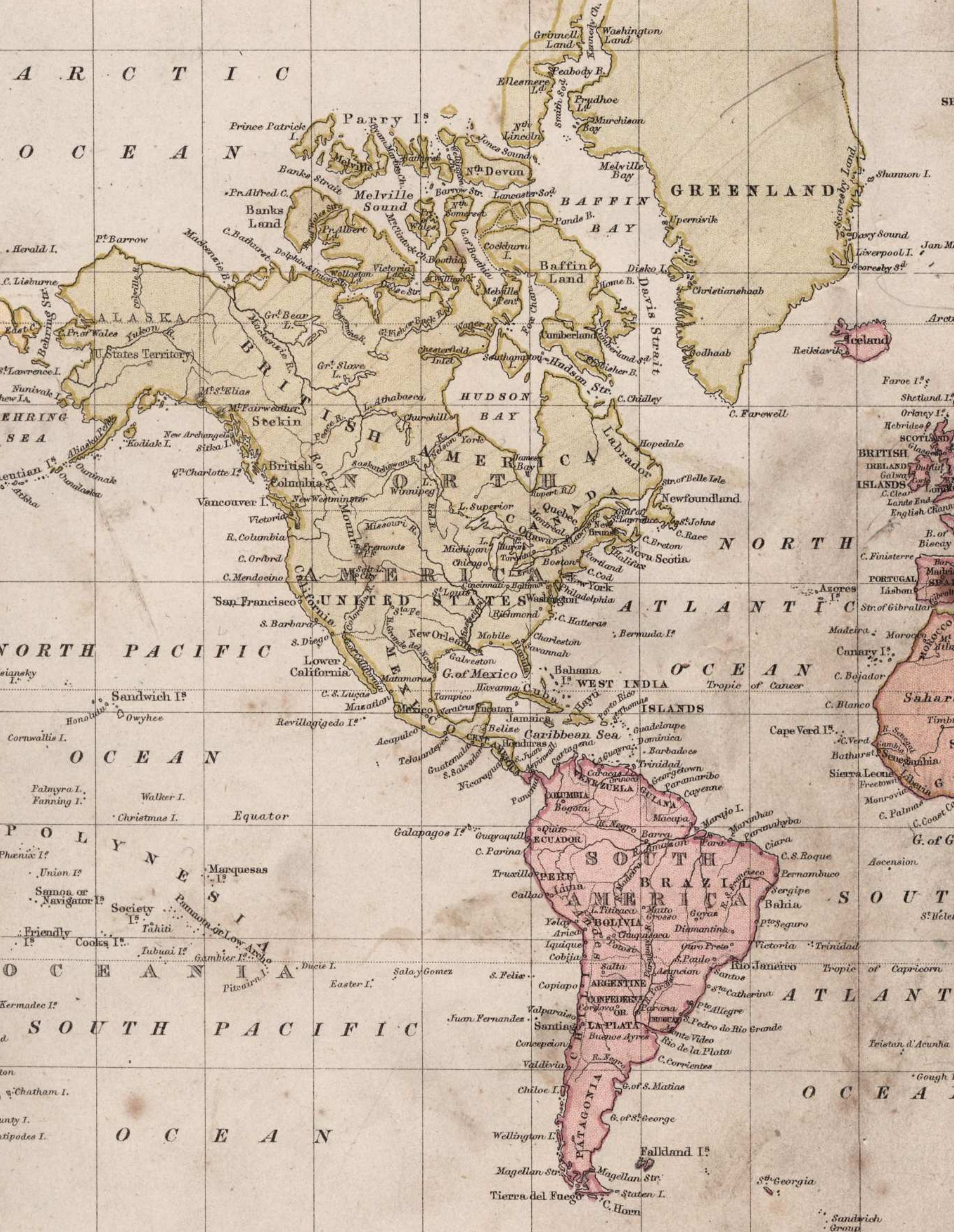
FROM THE MAKERS OF ALL ABOUT HISTORY

Digital Edition

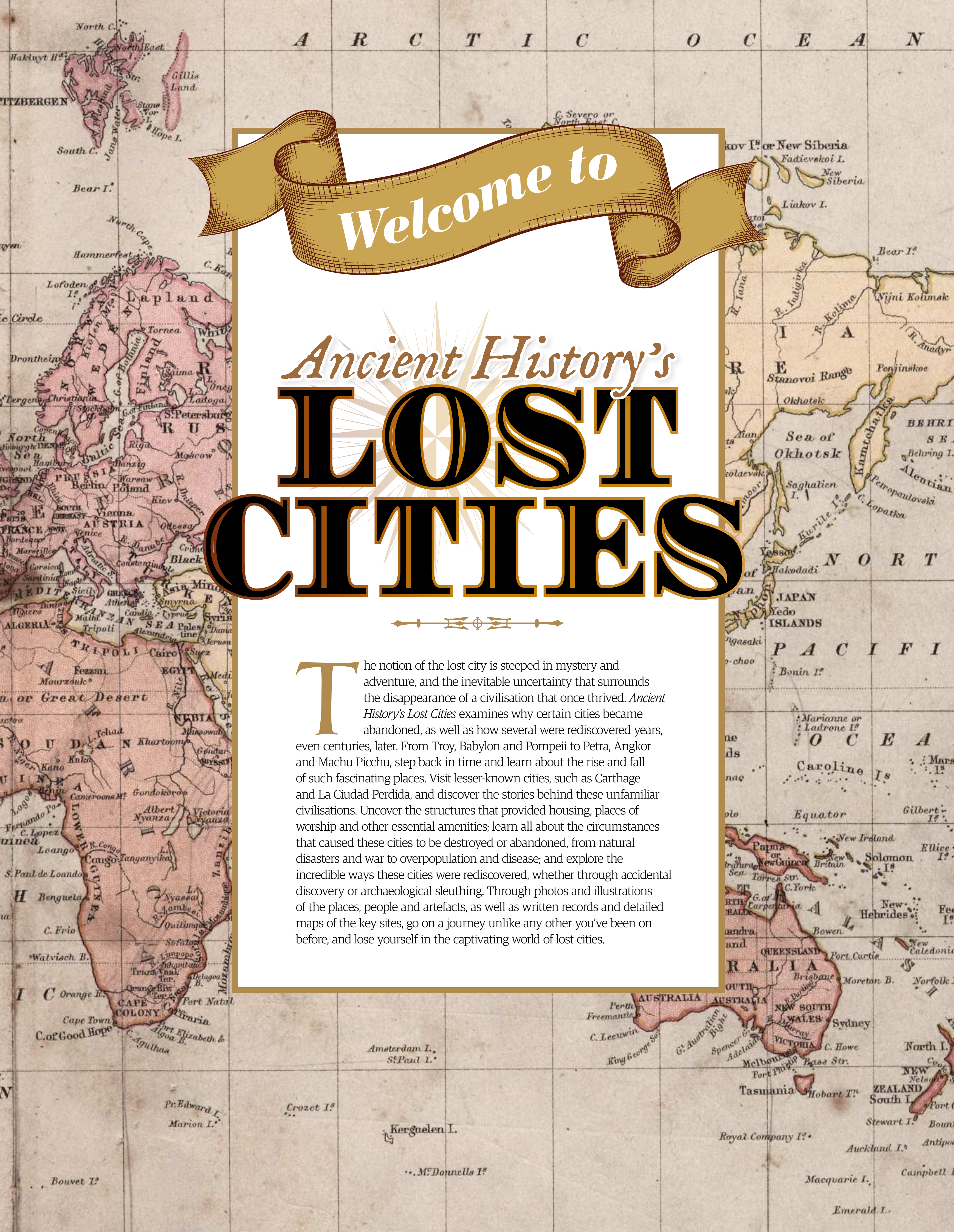
FUTURE

FIFTH EDITION

MACHU PICCHU ◆ ANGKOR ◆ POMPEII ◆ PETRA ◆ BABYLON



ARCTIC OCEAN
Grinnell Land
Kennedy Ch.
Washington Land
Peabody B.
Ellesmere Ld.
Smith Sd.
Prudhoe Ld.
Murchison Bay
Prince Patrick I.
Parry Is.
Nth. Lincoln
Jones Sound
Melville I.
Byam Martin Ch.
Bathurst
Wellington Ch.
Nth. Devon
Melville Bay
Banks Strait
Pr. Alfred C.
Melville Sound
Barrow Str.
Lancaster Sd.
BAFFIN BAY
GREENLAND
Scoresby Land
Shannon I.
Banks Land
Pr. of Wales Str.
Pr. Albert Ld.
M'Clintock Ch.
Nth. Somerset
Pr. of Wales
G. of Boothia
Ponds B.
Upernivik
Davy Sound
Liverpool I.
Scoresby Sd.
Jan M
Pt. Barrow
Herald I.
C. Bathurst
Mackenzie B.
Dolphin & Union Str.
Victoria Ld.
Wollaston Ld.
Boothia
Dease Str.
K. William
Cockburn I.
Baffin Land
Disko I.
Davis Strait
Home B.
Christianshaab
C. Lisburne
Behring Str.
ALASKA
Colville R.
Yukon R.
Pr. of Wales
East C.
U. States Territory
Gt. Bear L.
Mackenzie R.
Coppermine R.
Gt. Fish or Back R.
Melville Pen.
Fox Chan.
Wager R.
Cumberland
Cumberland Sd.
Frobisher B.
Godhaab
Reikiavik
Iceland
Arct
St. Lawrence I.
Nunivak I.
Chesterfield Inlet
Southampton I.
Hudson Str.
Gt. Slave L.
BRITISH NORTH AMERICA
Mt. St. Elias
Mt. Fairweather
L. Athabasca
Churchill
HUDSON BAY
C. Chidley
C. Farewell
Faroe Is.
Shetland Is.
Orkney Is.
Hebrides
SCOTLAND
BEHRING SEA
Stekin
Kodiak I.
New Archangel
Sitka I.
Alaska Pen.
Peace R.
Nelson R.
York
Labrador
Hopedale
BRITISH ISLANDS
IRELAND
Galway
Dublin
Glasgow
Aleutian Is.
Ounimak
Oumalaska
Atkha
Qn. Charlotte Is.
British Columbia
Saskatchewan R.
James Bay
Rupert R.
Str. of Belle Isle
Newfoundland
C. Clear
Lands End
English Chann
Rocky Mount.
Winnipeg
L. Winnipeg
Red R.
CANADA
Quebec
Vancouver I.
New Westminster
Victoria
L. Superior
Montreal
Ottawa
Gulf of St. Lawrence
New Brunsk.
St. Johns
C. Race
C. Breton
Nova Scotia
Halifax
NORTH
B. of Biscay
R. Columbia
Missouri R.
Fremonts Pk.
Michigan
L. Huron
Toronto
R. St. Lawrence
C. Orford
Chicago
Boston
Portland
C. Cod
C. Finisterre
C. Mendocino
Salt L. City
L. Erie
New York
Philadelphia
PORTUGAL
Lisbon
SPAIN
Madrid
San Francisco
California
UNITED STATES
Cincinnati
Baltimore
Washington
St. Louis
Azores Is.
Sta. Fe
Colorado R.
Mississippi R.
Richmond
C. Hatteras
ATLANTIC OCEAN
Str. of Gibraltar
S. Barbara
Rio Grande del Norte
New Orleans
Mobile
Charleston
Savannah
Bermuda Is.
Madeira
Morocco
MOROCCO
Mt. Atlas
S. Diego
Florida
NORTH PACIFIC OCEAN
Lower California
Galveston
G. of California
MEXICO
Matamoras
G. of Mexico
Bahama Is.
WEST INDIA ISLANDS
Canary Is.
Tropic of Cancer
C. Bojador
siansky I.
Sandwich Is.
C. S. Lucas
Mazatlan
Tampico
Havanna
Cuba
Hayti
Porto Rico
St. Thomas
C. Blanco
Sahar
Honolulu
Owyhee
Revillagigedo Is.
Mexico
Vera Cruz
Yucatan
Jamaica
Timbu
Cornwallis I.
Acapulco
Tehuantepec
Beliza
CENT.
Honduras
Caribbean Sea
Guadeloupe
Dominica
Barbadoes
Cape Verd Is.
C. Verd
R. Senegal
Gambia
Senegambia
Bathurst
OCEAN
Guatemala
S. Salvador
S. Juan
Nicaragua
Cartagena
La Guayra
Trinidad
Sierra Leone
Freetown
Liberia
Panama
Caracas
Orinoco
VENEZUELA
Georgetown
Paramaribo
Cayenne
GUIANA
Monrovia
Palmyra I.
Fanning I.
Walker I.
COLUMBIA
Bogota
Macapa
C. Palmas
C. Coast
Christmas I.
Equator
Marajo I.
Maranhao
Parnahyba
POLYNESIA
Galapagos Is.
Guayaquil
Quito
ECUADOR
R. Negro
Barra
R. Amazon
Para
Ciara
G. of G
Phenix Is.
C. Parina
SOUTH AMERICA
C. S. Roque
Ascension
Union Is.
Marquesas Is.
Truxillo
PERU
Madeira
BRAZIL
R. S. Francisco
Pernambuco
Samoa or Navigator Is.
Society Is.
Tahiti
Paumotu or Low Archo.
Callao
Lima
Sergipe
Bahia
SOUT
L. Titicaca
Matto Grosso
Goyaz
St. Helen
Yelay
Arica
BOLIVIA
Chuquisaca
Diamantina
Pto. Seguro
Friendly Is.
Cooks Is.
Tubuai Is.
Gambier Is.
Iquique
Cobija
Potosi
Ouro Preto
Victoria
Trinidad
Andes
S. Paulo
Rio Janeiro
Tropic of Capricorn
OCEANIA
Ducie I.
Pitcairn I.
Sala y Gomez
Easter I.
S. Felix
Salta
Paraguay
Asuncion
Santos
Copiapo
ARGENTINE CONFEDERATION OR LA PLATA
Sta. Catherina
ATLANT
Kermadec Is.
Cordova
Parana
Pto. Allegre
Valparaiso
Santiago
URUGUAY
S. Pedro do Rio Grande
SOUTH PACIFIC
Juan Fernandez
Concepcion
Buenos Ayres
Monte Video
Rio de la Plata
Tristan d'Acunha
Valdivia
R. Negro
C. Corrientes
Chatham I.
CHILI
PATAGONIA
G. of S. Matias
Gough I.
Chiloe I.
OCEA
unty I.
tipodes I.
G. of St. George
OCEAN
Wellington I.
Falkland Is.
Magellan Str.
Sth. Georgia
Tierra del Fuego
Staten I.
C. Horn
Sandwich Group



Welcome to

Ancient History's LOST CITIES

The notion of the lost city is steeped in mystery and adventure, and the inevitable uncertainty that surrounds the disappearance of a civilisation that once thrived. *Ancient History's Lost Cities* examines why certain cities became abandoned, as well as how several were rediscovered years, even centuries, later. From Troy, Babylon and Pompeii to Petra, Angkor and Machu Picchu, step back in time and learn about the rise and fall of such fascinating places. Visit lesser-known cities, such as Carthage and La Ciudad Perdida, and discover the stories behind these unfamiliar civilisations. Uncover the structures that provided housing, places of worship and other essential amenities; learn all about the circumstances that caused these cities to be destroyed or abandoned, from natural disasters and war to overpopulation and disease; and explore the incredible ways these cities were rediscovered, whether through accidental discovery or archaeological sleuthing. Through photos and illustrations of the places, people and artefacts, as well as written records and detailed maps of the key sites, go on a journey unlike any other you've been on before, and lose yourself in the captivating world of lost cities.

Ancient History's LOST CITIES

Future PLC Quay House, The Ambury, Bath, BA1 1UA

Bookazine Editorial
Editor **Sarah Bankes**
Designer **Madelene King**
Compiled by **Jessica Leggett & Briony Duguid**
Senior Art Editor **Andy Downes**
Head of Art & Design **Greg Whitaker**
Editorial Director **Jon White**

All About History Editorial
Editor **Jonathan Gordon**
Art Editor **Kym Winters**
Editor in Chief **Tim Williamson**
Senior Art Editor **Duncan Crook**

Cover images
Alamy, Getty Images, Mary Evans, Thinkstock

Photography
All copyrights and trademarks are recognised and respected

Advertising
Media packs are available on request
Commercial Director **Clare Dove**

International
Head of Print Licensing **Rachel Shaw**
licensing@futurenet.com
www.futurecontenthub.com

Circulation
Head of Newstrade **Tim Mathers**

Production
Head of Production **Mark Constance**
Production Project Manager **Matthew Eglinton**
Advertising Production Manager **Joanne Crosby**
Digital Editions Controller **Jason Hudson**
Production Managers **Keely Miller, Nola Cokely,**
Vivienne Calvert, Fran Twentyman

Printed in the UK

Printed by William Gibbons, 26 Planetary Road,
Willenhall, West Midlands, WV13 3XT

Distributed by Marketforce, 5 Churchill Place, Canary Wharf, London, E14 5HU
www.marketforce.co.uk Tel: 0203 787 9001

Ancient History's Lost Cities Fifth Edition (AHB4342)

© 2022 Future Publishing Limited

We are committed to only using magazine paper which is derived from responsibly managed, certified forestry and chlorine-free manufacture. The paper in this bookazine was sourced and produced from sustainable managed forests, conforming to strict environmental and socioeconomic standards. The paper holds full FSC or PEFC certification and accreditation.

All contents © 2022 Future Publishing Limited or published under licence. All rights reserved. No part of this magazine may be used, stored, transmitted or reproduced in any way without the prior written permission of the publisher. Future Publishing Limited (company number 2008885) is registered in England and Wales. Registered office: Quay House, The Ambury, Bath BA1 1UA. All information contained in this publication is for information only and is, as far as we are aware, correct at the time of going to press. Future cannot accept any responsibility for errors or inaccuracies in such information. You are advised to contact manufacturers and retailers directly with regard to the price of products/services referred to in this publication. Apps and websites mentioned in this publication are not under our control. We are not responsible for their contents or any other changes or updates to them. This magazine is fully independent and not affiliated in any way with the companies mentioned herein.

FUTURE
Connectors.
Creators.
Experience
Makers.

Future plc is a public
company quoted on the
London Stock Exchange
(symbol: FUTR)
www.futureplc.com

Chief executive **Zillah Byng-Thorne**
Non-executive chairman **Richard Huntingford**
Chief financial officer **Penny Ladkin-Brand**

Tel +44 (0)1225 442 244

Part of the
ALL ABOUT HISTORY
bookazine series

Widely Recycled

ipso. For press freedom with responsibility

CONTENTS

10
LEGEND, LORE AND LOST CITIES

18
TROY

22
BABYLON

30
TAXILA

34
CARTHAGE

42
POMPEII

52
PERSEPOLIS

60
PETRA

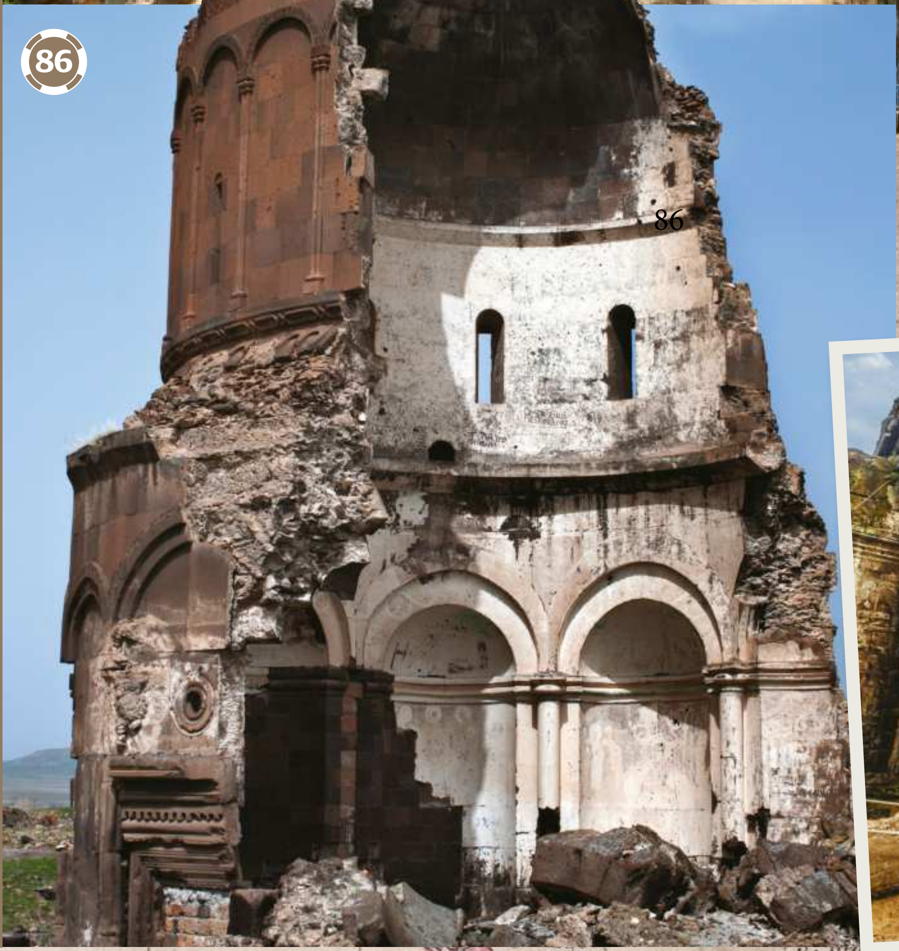
70
PALENQUE

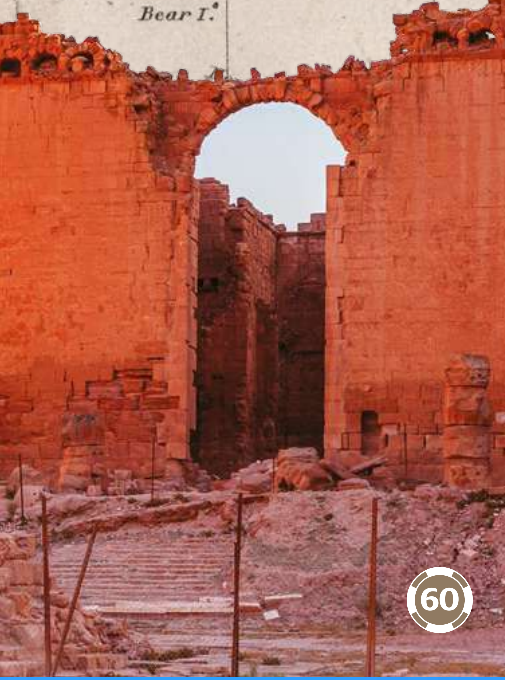
78
CTESIPHON

82
TIKAL

34

42


86



86
ANI

94
CALAKMUL

98
LA CIUDAD PERDIDA

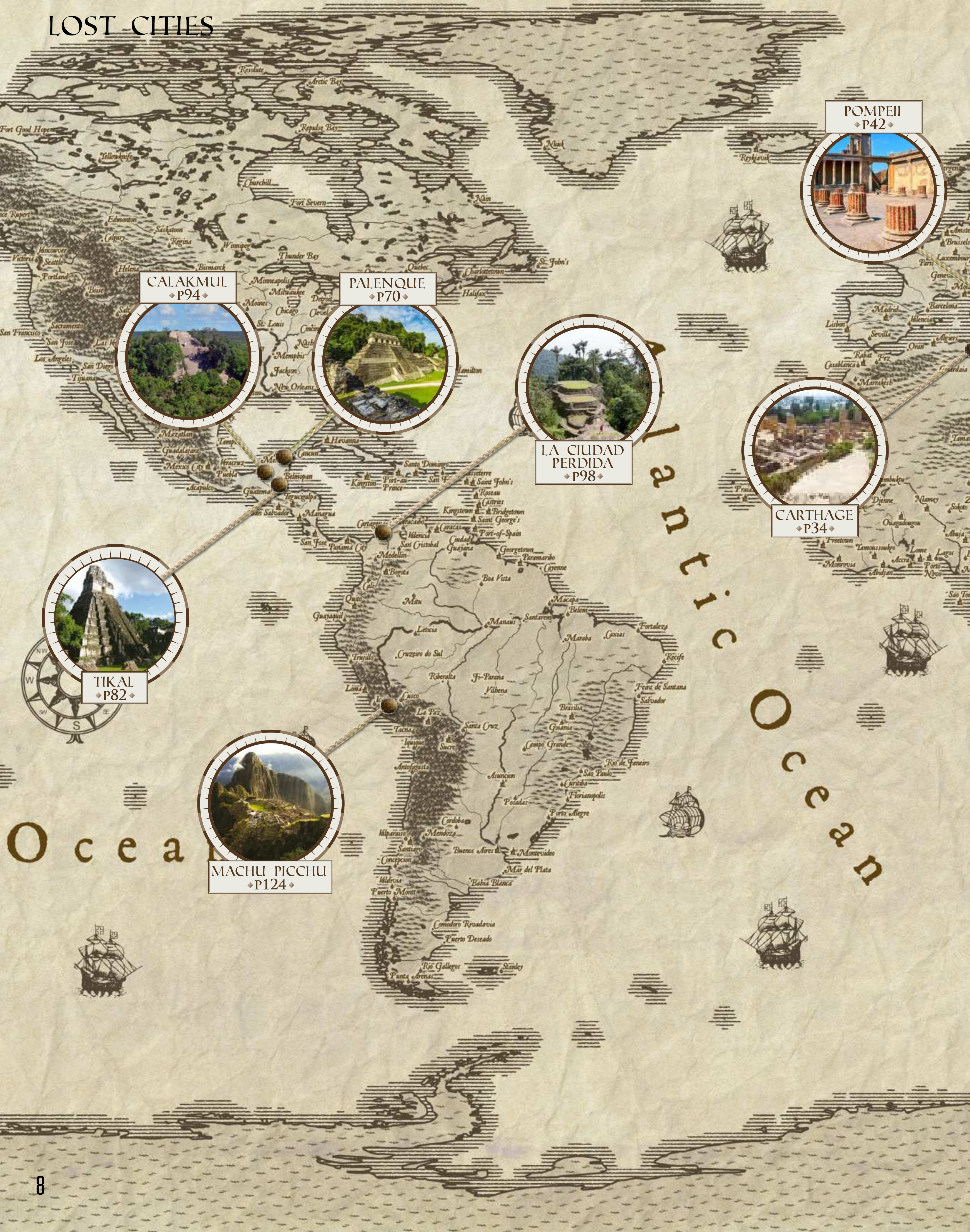
106
ANGKOR

116
GREAT ZIMBABWE

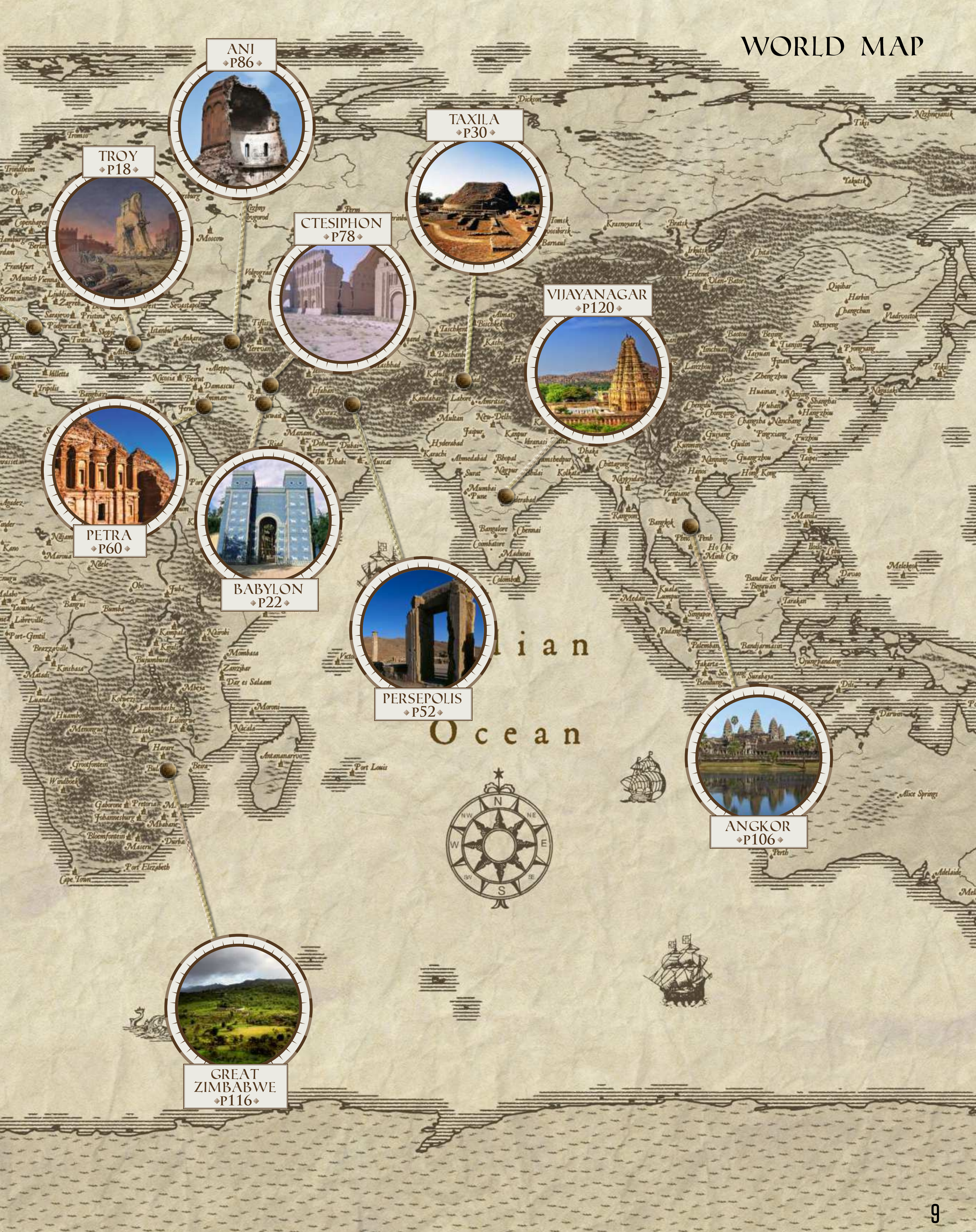
120
VIJAYANAGAR

124
MACHU PICCHU

138
LOST CITIES ACROSS THE GLOBE

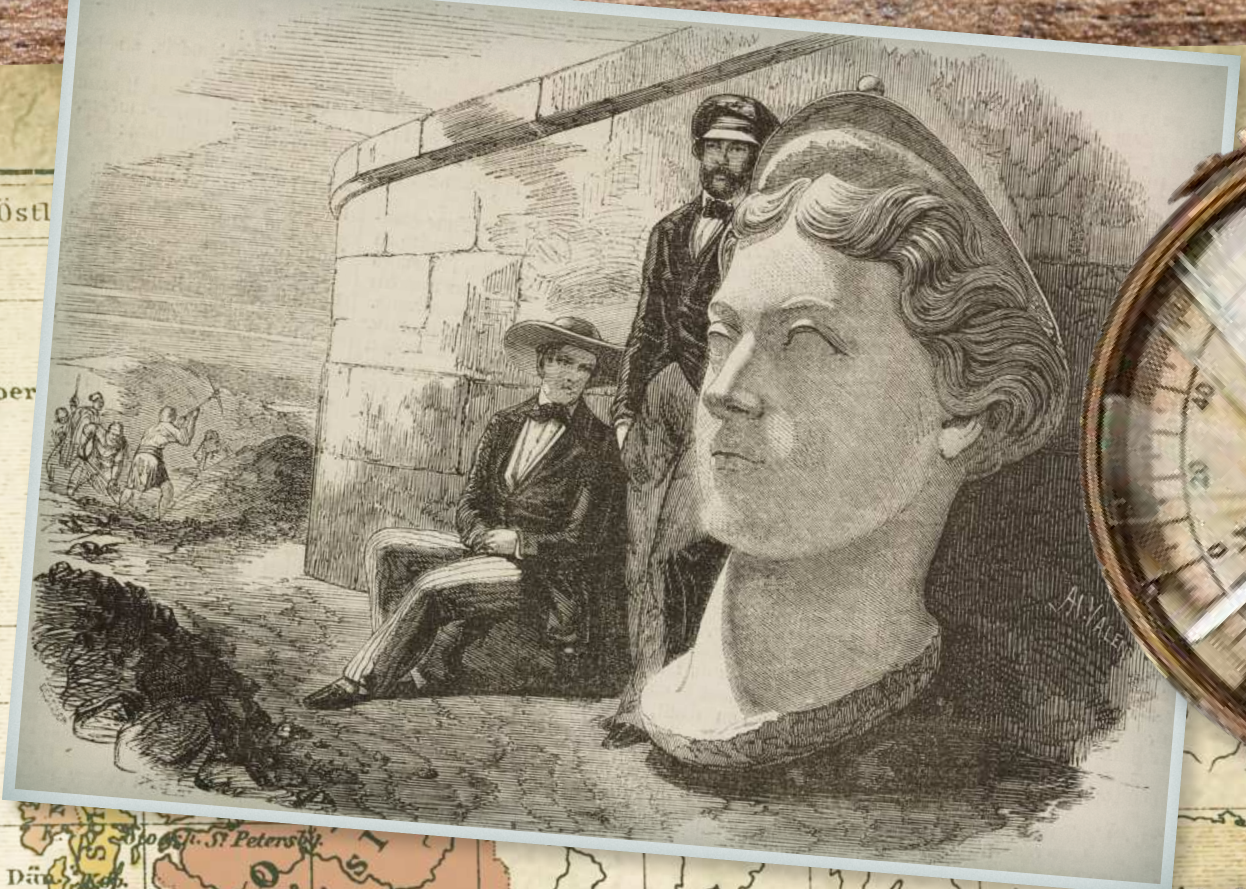

POMPEII
P42
CALAKMUL
P94
PALENQUE
P70
LA CIUDAD PERDIDA
P98
CARTHAGE
P34
TIKAL
P82
MACHU PICCHU
P124
Atlantic Ocean
Ocean
Resolute
Arctic Bay
Fort Good Hope
Repulse Bay
Nuuk
Reykjavik
Yellowknife
Churchill
Fort Severn
Nain
Edmonton
Calgary
Saskatoon
Regina
Winnipeg
Vancouver
Victoria
Seattle
Portland
Helena
Bismarck
Thunder Bay
Quebec
Charlottetown
St. John's
Halifax
Minneapolis
Milwaukee
Detroit
Chicago
St. Louis
Memphis
Jackson
New Orleans
San Francisco
Sacramento
San Jose
Los Angeles
San Diego
Tijuana
Mazatlan
Guadalajara
Mexico City
Puebla
Veracruz
Acapulco
Havanna
Cancun
Belmopan
Tegucigalpa
Managua
San Salvador
San Jose
Panama City
Kingston
Port-au-Prince
Santo Domingo
Saint John's
Roseau
Castries
Kingstown
Bridgetown
Saint George's
Port-of-Spain
Cartagena
Maracaibo
Valencia
Caracas
San Cristobal
Ciudad Guayana
Georgetown
Paramaribo
Cayenne
Medellin
Bogota
Cali
Quito
Guayaquil
Mitu
Boa Vista
Macapa
Belem
Santarem
Manaus
Leticia
Maraba
Caxias
Fortaleza
Recife
Trujillo
Cruzeiro do Sul
Riberalta
Ji-Parana
Vilhena
Feira de Santana
Salvador
Lima
Cusco
La Paz
Tacna
Iquique
Sucre
Santa Cruz
Brasilia
Goiania
Campo Grande
Antofagasta
Rio de Janeiro
Sao Paulo
Curitiba
Florianopolis
Asuncion
Posadas
Porto Alegre
Cordoba
Valparaiso
Mendoza
Santiago
Concepcion
Buenos Aires
Montevideo
Mar del Plata
Valdivia
Bahia Blanca
Puerto Montt
Comodoro Rivadavia
Puerto Deseado
Rio Gallegos
Stanley
Punta Arenas
Lisbon
Madrid
Barcelona
Valencia
Sevilla
Algiers
Oran
Rabat
Fez
Casablanca
Marrakesh
Paris
Brussels
Luxembourg
Geneva
Praia
Djenne
Niamey
Sokoto
Ouagadougou
Freetown
Yamoussoukro
Monrovia
Abidjan
Accra
Lome
Lagos
Porto Novo
Abuja
N
S
E
W
NW
SW
SE

WORLD MAP


ANI
P86
TAXILA
P30
TROY
P18
CTESIPHON
P78
VIJAYANAGAR
P120
PETRA
P60
BABYLON
P22
PERSEPOLIS
P52
ANGKOR
P106
GREAT ZIMBABWE
P116
...dian
Ocean
N
NE
E
SE
S
SW
W
NW

LEGEND, LORE AND
LOST CITIES

Among the most tantalising mysteries of antiquity, the stories of lost cities, rediscovered and undiscovered, convey a curious aura of fact and myth



The lure of the lost city transcends time and the human experience. For whatever reason, a people, a culture, a way of life was there for a while, and then it was gone.

People are 'social animals', and since the dawn of existence have clustered together for mutual support, hunting, gathering, farming, building shelters, raising children, practising the same religion, protecting one another against external threats, and developing cultural ties that civilisations have come to share in common. From cave dwellers to the builders of skyscrapers, these human instincts remain.

Long ago, the beginnings of economic, cultural and social identity emerged as peoples gathered in ever greater numbers. Settlements, villages and then cities developed as concentrations of a populace built substantial structures for housing, worship and countless other reasons. These cities were often located near natural resources, such as water, arable land or open spaces for livestock to graze, with proximity to trade routes as a widening world brought unknown commodities from distant lands. As commerce increased, profits were made and wealth accumulated.

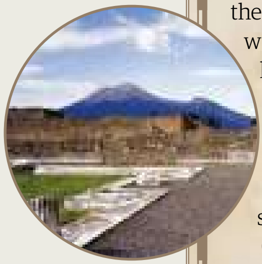
The notion of the lost city is today steeped in mystery, adventure, romance, the quest for gold or other riches, and the inevitable uncertainty that surrounds the disappearance of a civilisation that once thrived but for some reason ebbed away or simply disappeared. After all, if the city itself did exist, its ruins probably remain where they were in ancient times. It is likely then, that the soul of the city - its people - died or vacated their once vibrant home for some reason, known or unknown.

The phenomenon of the lost city exists in varied circumstances. Some cities become lost simply due

How cities become lost

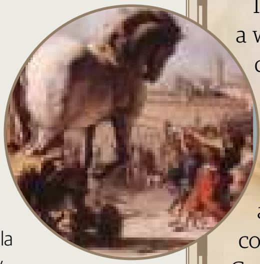
Both external and internal circumstances have caused cities to be destroyed or abandoned through the centuries

Natural disasters



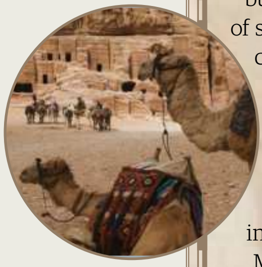
Earthquakes, tidal waves, volcanic eruptions and severe flooding have brought about the demise of many settlements through the ages. The city of Pompeii was built on an ancient lava flow from nearby Mount Vesuvius, and several other towns were located nearby. When the volcano erupted in 79 CE, Pompeii was inundated with volcanic ash and swamped with lava, destroying everything in its path. In 1319, the city of Ani in east Turkey was devastated by an earthquake that reduced many of its structures to heaps of rubble. Only a remnant of the once bustling settlement remained, later to be completely abandoned.

Ravages of war



With the enemy at the gates, in the streets and claiming booty, some cities died or were 'severely wounded' during wartime. Homer's *Iliad* is the story of the Greeks' burning of Troy during the culmination of years of conflict. The city of Taxila in modern Pakistan was severely damaged by marauding Huns. The once powerful North African city of Carthage threatened the mighty Roman Empire only to be destroyed by Roman legions under Scipio Aemilianus in 146 BCE during the Third Punic War. Before the catastrophic earthquake of 1319, the city of Ani was besieged and captured by a Seljuk army in 1064, and its population was slaughtered.

Overpopulation, trade and disease



The populations of lost cities varied widely, from only a few thousand to multitudes, and the strain of infrastructure was the undoing of several settlements. The relocation of vital trade routes and depletion of land suitable for farming and other natural resources also contributed to the decline and abandonment of lost cities. Taxila was the victim of changing trade routes, while Petra, a prominent city in south Jordan, prospered until overland trade routes were superseded by more efficient water routes. Invading Spaniards brought smallpox to the Inca at Machu Picchu and elsewhere. Although continuing warfare took its toll, the ancient city of Ctesiphon on the banks of the Tigris River was deserted by 800, its prominence overshadowed by Baghdad.

to the fact that those who lived there abandoned the area, lived their remaining lives in another place, and left no known record of their having resided elsewhere. Therefore, the city they left in earlier days became lost to collective memory. In other words, succeeding generations have no connection, no frame of reference to a city of which they know nothing. Other lost cities have been preserved in some fashion, at least in myth, theory or conjecture. The best preservation is the written record; stories of places and people that have survived through the centuries, and even enticing clues that a city, once very much alive, is out there, ravaged by time but retaining in its ruins the essence of the civilisation that once flourished where jungle vines, floodwaters or shifting sands now shroud its secrets.

Cities become lost for a variety of reasons. Natural disasters, famine, flood and fire all have claimed their victims. Disease, climate change, depleted resources and the devastation of war leave deserted dwelling places and empty edifices in their wakes. At times, the cause of a city's demise is completely unexplained, or the existence of the city itself may actually be the stuff of legend, living only in the imagination.

Indeed, the Camelot of King Arthur may be only a wisp of folklore, while Atlantis, both city and continent, have eluded discovery and frustrated would-be finders for centuries. El Dorado, the lost city of gold, has captivated the imagination of treasure hunters who have mounted expeditions and risked their lives in pursuit of a dream, while no proof of its existence has ever come to light. The Biblical cities of Sodom and Gomorrah, destroyed by a vengeful God because of their decadence and debauchery, have been erased from the tangible record, either buried in the sands of millennia or wiped away by the deity's wrath. Both Hindu and Buddhist texts allude to the kingdom of Shambala, nestled somewhere among the towering peaks of the Tibetan Himalayas - but there is nothing, no stack of stone, unearthed idol, or chiselled inscription that confirms its actual presence. Shambala, though, lives on in thought through religious writings and even in popular culture via fanciful images and song.

The Maya civilisation was a Mesoamerican civilisation developed by the Maya peoples

Mother Nature has borne responsibility for the demise of numerous cities. Some experts theorise that Atlantis was swallowed up by the sea, possibly a tsunami that followed a catastrophic earthquake. In 79 CE an angry Mount Vesuvius erupted and inundated the city of Pompeii in a wave of volcanic ash and lava. Molten rock flooded through the streets and terrified citizens were buried alive, some of them frozen in time. The nearby city of Herculaneum met a similar fate. Established as a centre of commerce along major trade routes during the 4th century BCE, the city of Petra, its ruins lying in modern-day southern Jordan, was eventually abandoned after a tremendous earthquake inflicted heavy damage to buildings in 363, and maritime trade routes encroached on its landward passages, decreasing the city's commercial relevance. Similarly, the crossroads city of Taxila, located in north east Pakistan, began to decline during the 5th century following devastating damage inflicted by invading Huns and the shift of major trade routes away from its location.

A Mayan pyramid that served as a ceremonial structure stretches skyward among the ruins of the city of Tikal in Guatemala

Collectively constructed as the largest religious monument in the world, Angkor in Cambodia was originally a centre of the Hindu and subsequently the Buddhist faith. Construction of the sacred

"Erosion of arable land resulted in a plummeting population"

city and capital of the Khmer Empire began in the 12th century, as 300,000 common labourers and artisans worked placing stone and sculpting magnificent likenesses of deities in bas relief. In time, much of the city was engulfed in thick jungle vegetation and rediscovery efforts are ongoing.

The great Mayan population centre at Tikal in the rainforest of Guatemala reached its zenith during a 700-year period from 200 to 900. Estimates of its central and surrounding population range from 10,000 to 90,000. Dominated by religious temples that rose nearly 50 metres high, the sprawling city covered nearly 16 square kilometres and encompassed 3,000 stone structures. By the 9th century, continuing warfare led to further concentration of the population at Tikal while simultaneously eroding the productive capacity of the land in the surrounding area. In turn, agricultural efforts failed to produce enough food to feed the people and natural resources were depleted. Deforestation and erosion of arable land resulted in a plummeting population and eventual abandonment of Tikal. By 950, Tikal was reduced to a ghost city.

How cities are rediscovered

Tantalising clues, the promise of wealth, the desire to learn and simple good fortune drive the rediscovery of lost cities

Accidental discoveries

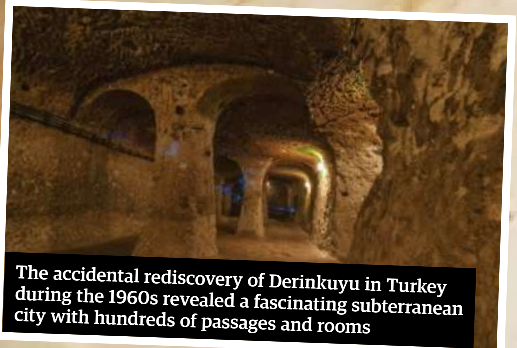
When a simple home-improvement project opens the door to a lost subterranean city, or the search for sunken 18th century warships leads to the discovery of a city submerged in the Mediterranean Sea for more than a millennium, no other explanation applies. Like others in science, mathematics or medicine, the discoveries of the archaeological wonders of Derinkuyu and Heracleion were by accident. At Troy, the search for the city of King Priam and Helen, the face that launched 1,000 ships, led to the discovery of at least eight other cities constructed through the ages on the same site. The pursuit of one goal may lead to finding another, and these are but a few prominent examples.

Archaeological sleuthing

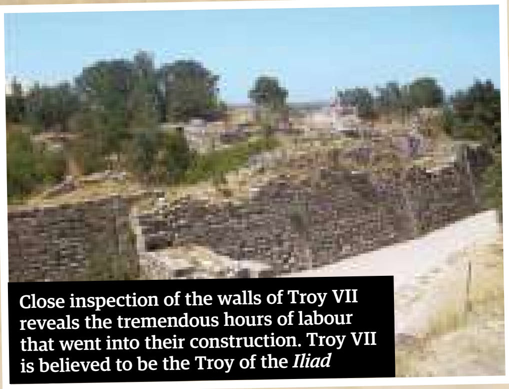
The archaeological detective digs – often literally – into the dust, dirt and detritus of the ages to piece together the story of a city once abandoned. Clues lead one to another, either surfacing in the written record or evidenced in a shard of pottery or an ancient story. With Taxila, Sir Arthur Cunningham had unravelled conflicting accounts of its location, used his best methodology to calculate the likely location of the ancient trade centre and forged ahead. The work of thieves, tomb robbers and opportunists helped modern archaeologists to locate La Ciudad Perdida. Their curiosity was aroused when artefacts began to circulate on the black market.

Fame, fortune and knowledge

The quest, the journey of fulfilment, and the thirst for knowledge, riches or fame drive some adventurers to seek lost cities. Ulugh Khan Jahan, a Turkish general of the 15th century, founded the city of Bagerhat, located in modern Bangladesh. At the height of its glory, Bagherat included at least 50 Islamic mosques and monuments. Although Ulugh Khan Jahan probably never conceived of the possibility that his city might one day be consumed by the surrounding jungle, his death in 1459 was a harbinger of its demise. Slowly abandoned, Bagerhat was left to the clinging vines and nearby swampland that inexorably reclaimed the site. Encouraged by the prospect of discovery, officials undertook a survey of the area in 1895, which was the beginning of a new era of examination.

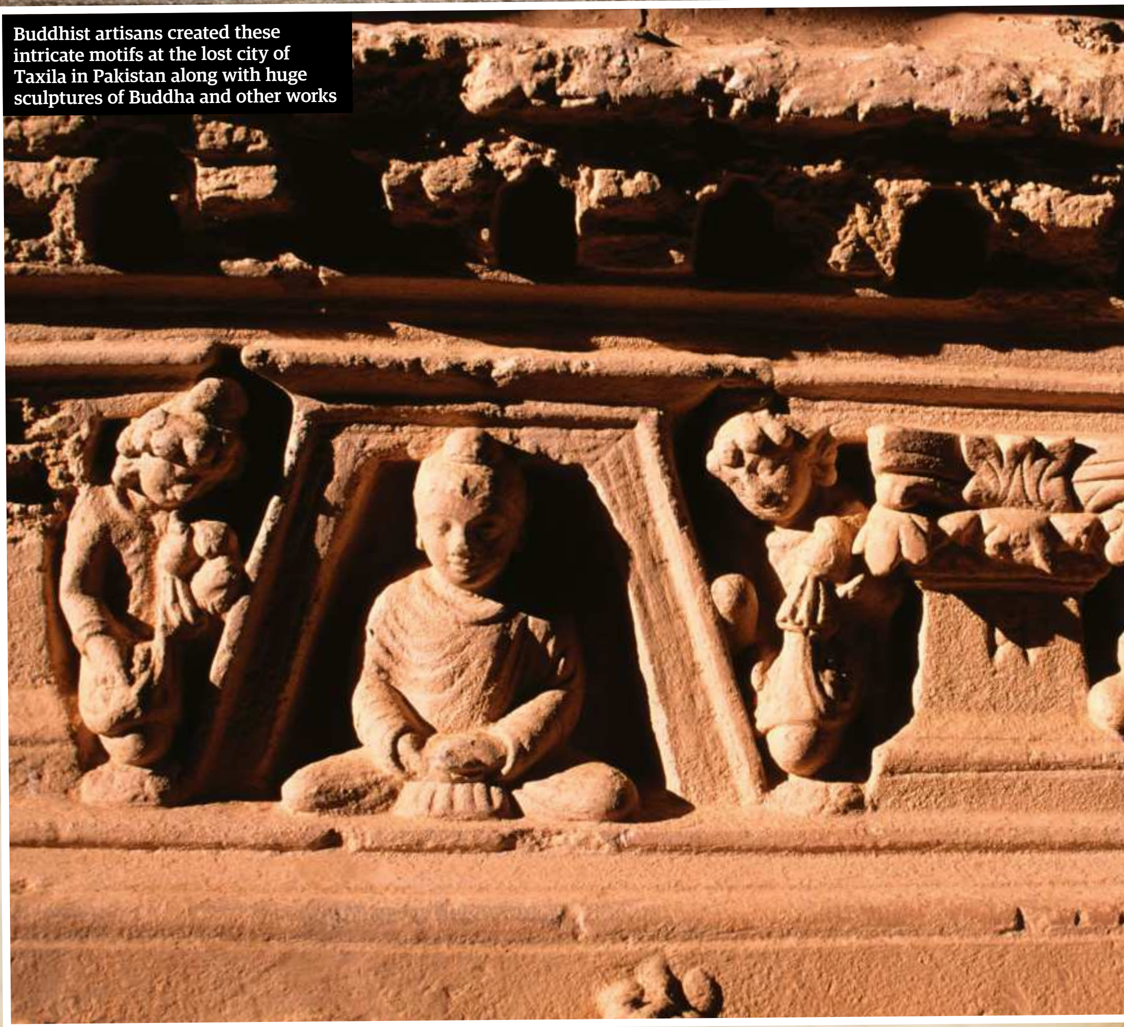


The accidental rediscovery of Derinkuyu in Turkey during the 1960s revealed a fascinating subterranean city with hundreds of passages and rooms



Close inspection of the walls of Troy VII reveals the tremendous hours of labour that went into their construction. Troy VII is believed to be the Troy of the *Iliad*

The terraces of Machu Picchu stretch towards the guardhouse in the distance amid the ruins of the great mountain palace



Buddhist artisans created these intricate motifs at the lost city of Taxila in Pakistan along with huge sculptures of Buddha and other works

"The site believed to be Troy is actually the location of at least nine cities, rebuilt through the ages at the same location"

The Inca Empire was the largest empire in pre-Columbian America and possibly in the world in the early 16th century

The Incan Empire flourished for almost 200 years during the 13th and 14th centuries, but its vast territorial holdings, religious practices and eventually its cities fell victim to European interlopers during the Age of Exploration. The great estate at Machu Picchu, a religious centre and probably the home of Emperor Pachacuti during the mid-1400s, is located 2,430 metres above sea level, 80 kilometres north of the Incan capital city of Cuzco. Unlike other Incan cities that were heavily damaged or destroyed by the invading Spanish conquistadors, Machu Picchu's polished stone walls and intricate carvings remain largely untouched. The estate was abandoned around 1550, possibly due to the scourge of smallpox introduced by the Europeans, which killed thousands of Incas. During their explorations, the Spanish never found Machu Picchu, and the encroaching jungle left it largely obscured until the early 20th century.

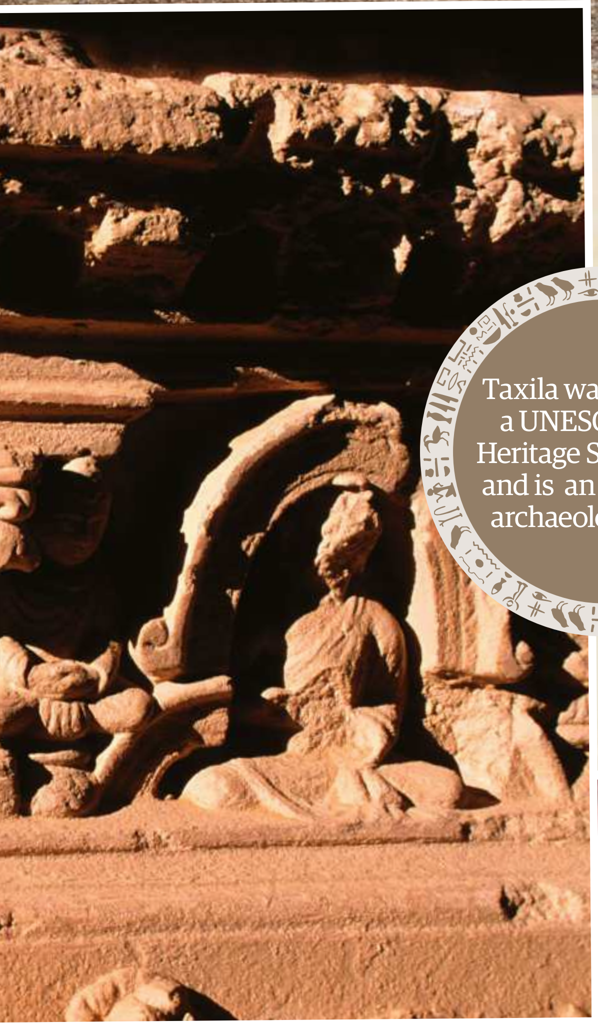
The great city of Troy once dominated the east Mediterranean basin and became the stuff of myth and legend in the *Iliad* of Homer, spurring explorers to search for the city where Achilles and Hector duelled to the death, Helen sought refuge, and a fabled horse became the undoing of a people. Modern archaeologists have assessed the site believed to be Troy is actually the location of at least nine cities, destroyed and rebuilt through the ages at the same location. Homeric Troy dates to sometime in the 12th to 14th centuries BCE, and corresponds to excavated site Troy VII.

Through the centuries, debate around the actual location of Troy has persisted, and archaeological excavations that began in the mid-1800s continue to this day.

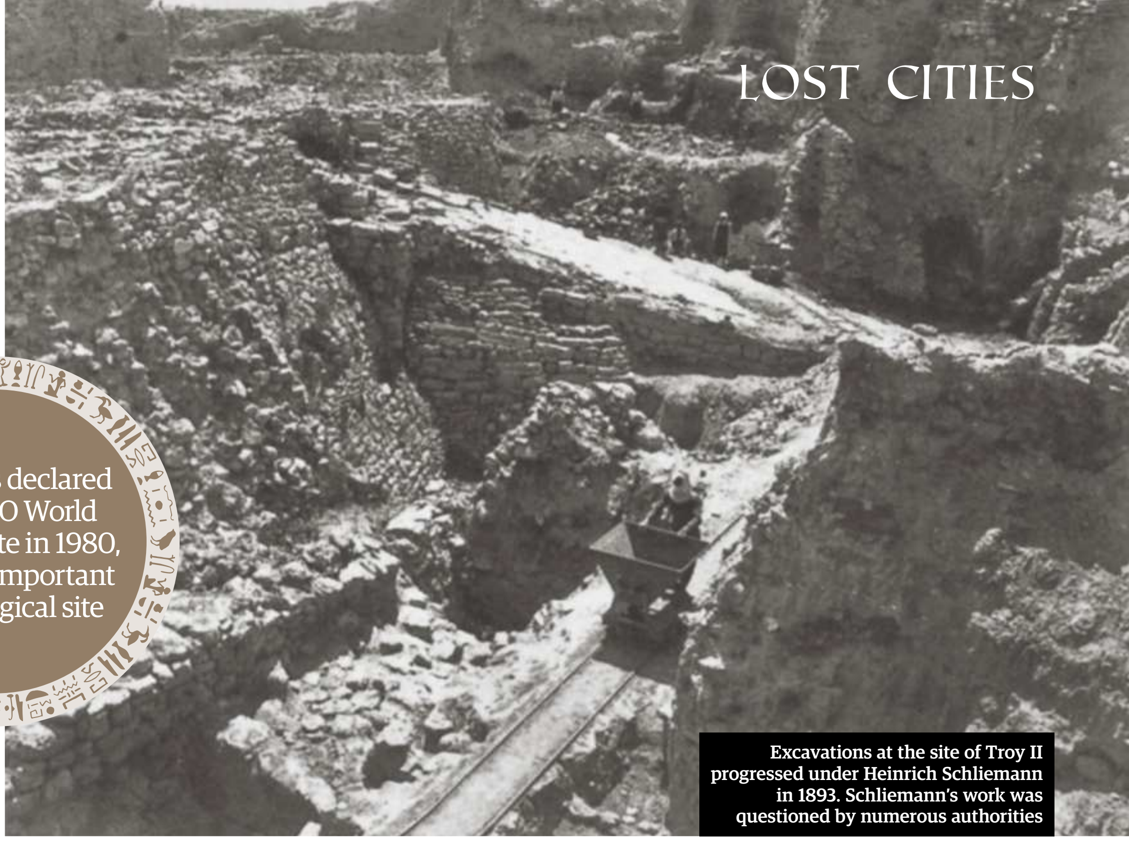
The rediscovery of lost cities lies with the adventurous spirit of the treasure hunter, the explorer with a thirst for knowledge of ancient civilisation, the detective intent on solving an ancient mystery, or even by accident. While the abandoned city of Taxila has become a focal point of the modern Pakistani tourism industry with its museum and well-documented ruins, its presence was known but its exact location eluded archaeologists for years. Early texts and descriptions in the written record placed Taxila some distance from its actual location, and until the early 19th century when numerous lost cities were rediscovered, Taxila remained silent and desolate.

The Roman philosopher Pliny believed Taxila was located two days distant from the Indus River along the banks of the Haro River. However, in 1863, Sir Arthur Cunningham noted that the Chinese Buddhist monk Hieun Tsang recorded the distance as three days. Cunningham began excavations at a site more closely corresponding to Hieun Tsang's report and found Taxila, beginning decades of archaeological research at the site.

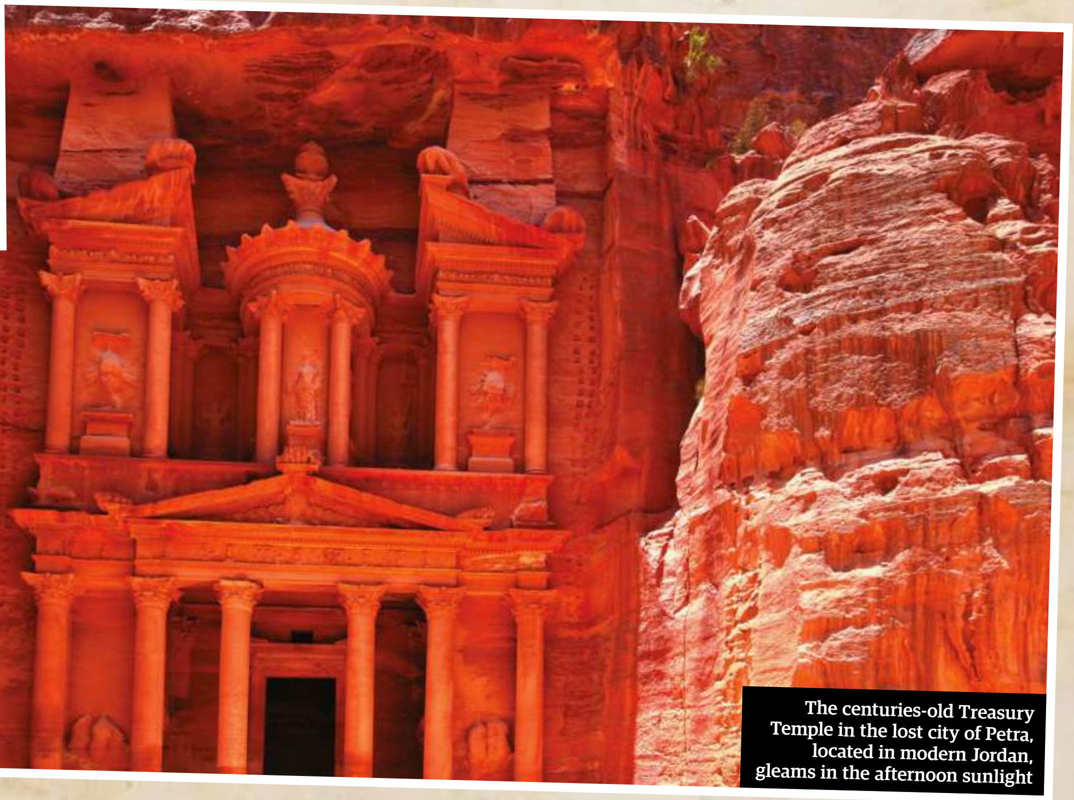
Machu Picchu remained dormant and shrouded in jungle vines and lush overgrowth until 1911, when a Peruvian guide brought Yale University professor Hiram Bingham to the site. The estate had been virtually unchanged since its abandonment in the 16th century, 400 years earlier. Pompeii was lost for 1,500 years, entombed in the shadow of Mount Vesuvius until its accidental rediscovery in 1599, when the digging of a channel to alter the course of the Sarno River progressed right into the buried city's walls. Still, another 150 years passed before



Taxila was declared a UNESCO World Heritage Site in 1980, and is an important archaeological site



Excavations at the site of Troy II progressed under Heinrich Schliemann in 1893. Schliemann's work was questioned by numerous authorities



The centuries-old Treasury Temple in the lost city of Petra, located in modern Jordan, gleams in the afternoon sunlight

Spanish engineer Rocque Joaquin de Alcubierre began to probe through four to six metres of hardened pumice and volcanic ash to find the amazingly well-preserved remnants of the doomed city.

The city of Great Zimbabwe was the capital of the African kingdom that shared its name. Established in the 11th century, it flourished for 400 years, and its population grew to an estimated 19,000. Although depletion of resources is considered by many archaeologists as the primary cause for its abandonment, the mystery remains. Other possible causes include the exhaustion of nearby gold mines, the decline of active trade as routes moved in different directions, and water shortages precipitated by climate change. Although Europeans visited the site in the 1500s, a century after Great Zimbabwe was abandoned, efforts to catalog its history were minimal. The city slipped into obscurity for another three centuries.

Adam Render, a German-American trader and adventurer, came upon the ruins of Great Zimbabwe in 1867 while on a hunting expedition, and brought German explorer and geographer Karl Mauch to the site in 1871. Mauch had been searching for the land of Ophir, mentioned in the *Bible* as being associated with King Solomon. Mauch recorded the existence of Great Zimbabwe and began an effort to link its rediscovery with the story of Solomon and the Queen of Sheba, capturing the popular imagination of the period.

At times, archaeologists have stumbled in their efforts to unlock the secrets of cities once lost. Despite its fame and established place in fact and fiction, the actual location of Troy remained elusive for more than a millennium. In the mid-1860s, British archaeologist Frank Calvert dug exploratory trenches on the site of successive Trojan cities, and German Heinrich Schliemann soon followed. Later, archaeologists who conducted excavations at Troy derided Schliemann's work. Although he had unearthed many artefacts that helped to identify the site more clearly, Schliemann was accused of having done as much harm as good, actually destroying much of the site in the process.

Today, the rediscovery of lost cities continues. In 1963, a Turkish man was demolishing a wall in his home and stumbled upon a passageway to the underground city of Derinkuyu, which dates to the Byzantine era from 780 to 1180. Derinkuyu is the largest underground city discovered and excavated in modern Turkey. Its infrastructure is large enough to have supported a population estimated up to 20,000, and its depth reaches 600 metres. Roughly half the city has been excavated, revealing

The remains of the conical tower stand within the walls of the Great Enclosure of the medieval city of Great Zimbabwe in Africa

This colossal statue of a Ptolemaic king was recovered from its underwater resting place in the rediscovered city of Heracleion in Egypt

dwellings, places of worship, stables, tombs, wells, cellars and other elements related to everyday living. Derinkuyu opened to visitors in 1969.

The pre-Columbian city of La Ciudad Perdida was rediscovered in 1972 when treasure hunters and looters brought artefacts out of the Colombian forest, and these antiquities were seen for sale through the local black market. By 1976, archaeologists had become aware of the finds. They rediscovered the city and prepared for its excavation and preservation, which is an ongoing effort.

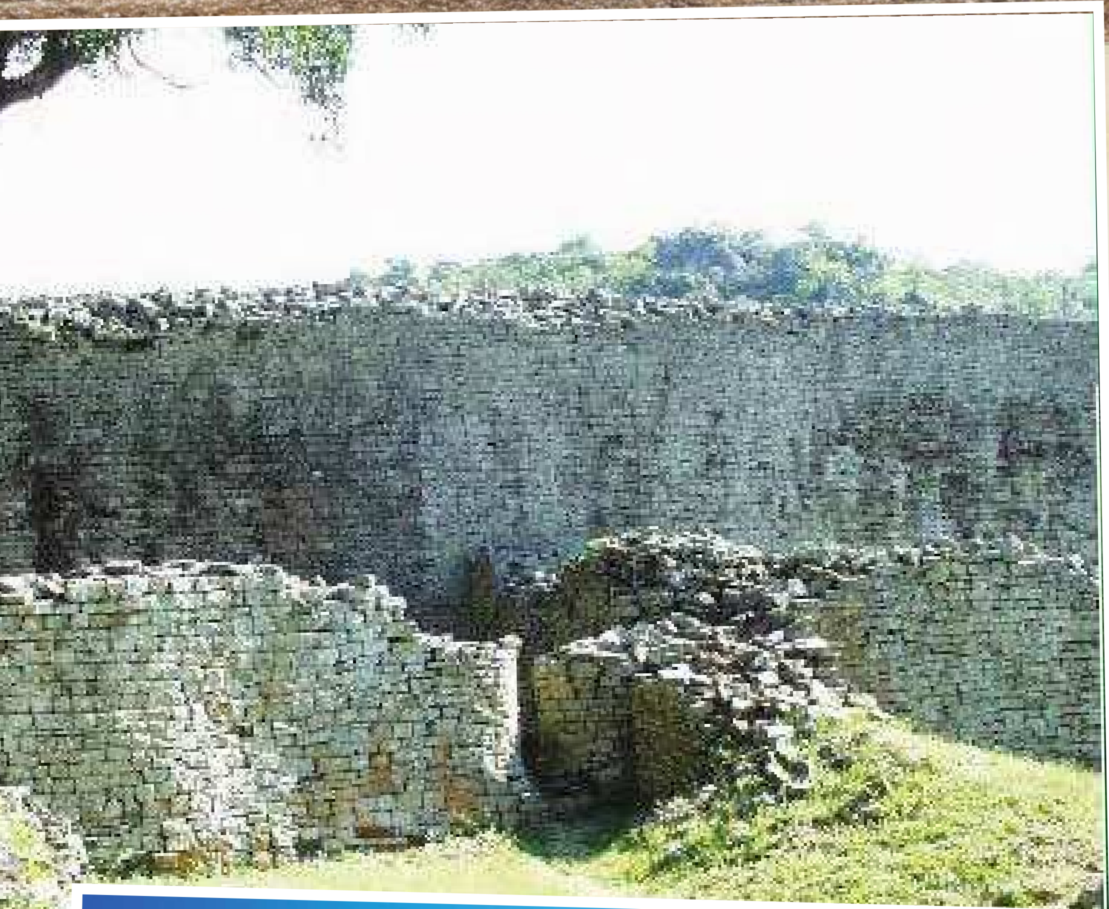
For years, stories of the ancient Egyptian city of Heracleion were thought to be only the stuff of legend, including the tale that it was presumably lost to the waters of the Mediterranean Sea 1,200 years ago. In 2000, Dr Franck Goddio, a French archaeologist searching the waters of Aboukir Bay for the wrecks of French warships lost in a Napoleonic Era naval battle, accidentally found the city. Immense carved statues standing nearly five metres high have been dated to the 8th century BCE and hauled to the surface. The wreckage of dozens of ancient ships, gold coins and bronze measuring weights have been found as well.

The story of Jamestown, the first permanent English settlement in North America established in 1607, is well documented. The tribulation of the 'starving time', the near failure due to sickness and lack of food and water, the assistance and later the hostility of the indigenous people to the European settlers, as well as the eventual expansion of the Virginia colony are familiar. However, archaeologists and historians believed for decades that the original Jamestown fort was lost forever to erosion due to its location near the mouth of the James River and the Atlantic Ocean. In the 1990s, however, the history of Jamestown was rewritten with the discovery and conclusive identification of the palisades of the original triangular Jamestown fort.

For the last 30 years, teams led by Dr William Kelso have unearthed artefacts, including several graves, confirming that most of the fort is in fact on dry land. Ironically, scientists, tourists, historic preservationists and others had believed the original hypothesis, and walked the grounds with the amazing discovery a few metres beneath their feet.

In numerous ways, lost cities are architectural and cultural marvels. People carried on their routine activities, streets bustled with travellers and merchants, and artisans with remarkable skills plied their crafts. Structures were built of stone, sometimes without the aid of mortar, as

> Some lost cities thought to be mere legendry have actually been found, such as Heracleion



The ruins of the once-mighty city of Carthage maintain their grandeur on the Tunisian coast as the Mediterranean Sea stretches beyond

well as wood and various concoctions of plaster and masonry. The walls of towering temples, government halls, palaces and public areas were often adorned with works of art and intricate inscriptions that give modern observers glimpses of life in ancient times in locales across the globe.

Although history and folklore are inevitably giving up their secrets with the advent of modern technology, analysis of written records and even happenstance, it is inevitable to conclude that some lost cities will remain lost, either due to their remote locations, our inability to unlock certain riddles of his past, or possibly because they never existed at all. Atlantis eludes; El Dorado remains hidden. Modern people have yet to walk the streets of Camelot.

Meanwhile, the thirst for more knowledge of the compelling story of human history drives the adventurer, the scientist and the simply curious to seek and find the cities that preceded modern concentrations of concrete and steel.

Camelot found?

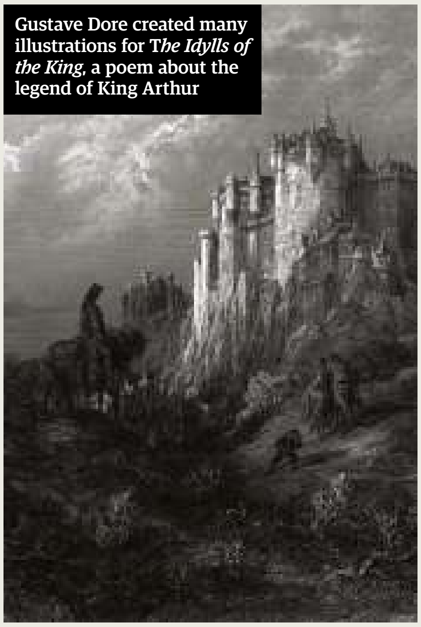
A retired English professor believes he may have solved the ancient riddle of the location of King Arthur's legendary city

For centuries, historians have debated whether King Arthur and his fabled city of Camelot are fact or fiction. In the case of Camelot, perhaps the answer is at hand. Peter Field, a retired professor of English at Bangor University in Wales, believes he has unravelled the mystery. Field, an expert on Arthurian literature, taught at Bangor for 40 years before retiring in 2004, and recently spent 18 months developing a theory to support a likely location for the city.

In December 2016, Field revealed that he believes the location of King Arthur's city is the small town of Slack in West Yorkshire. While historians have speculated that the location, if it exists at all, might be Caerleon in South Wales, Cadbury Castle in Somerset, Tintagel in Cornwall, or Cardigan or Carmarthen in Wales, Field asserts that Slack is the logical place, more precisely beneath a golf course and a portion of the M62 motorway.

The basis for Field's assertion is straightforward. An ancient Roman fort stood at a site in Slack called Camulodunum, which may be the origin of the name 'Camelot'. The time of King Arthur was supposedly around 500, when he would have led Britons against an Anglo-Saxon invasion from the north and west, and Slack is centrally located to send soldiers towards a threat along either coast. The first mention of King Arthur in Camelot is contained in a French poem from the Champagne region dated 1180. The Dark Ages intervened from Arthur's supposed lifetime until the poem emerged, and little relevant historical information from the period actually exists.

"It was quite by chance," the professor related. "I was looking at some maps, and suddenly all the ducks lined up. I believe I may have solved a 1,400-year-old mystery."



Gustave Dore created many illustrations for *The Idylls of the King*, a poem about the legend of King Arthur

© Alamy, Arun Varadarajan, CherryX, Getty Images, Marius Loots, Morn, Nevit Delman, PashiX

TROY

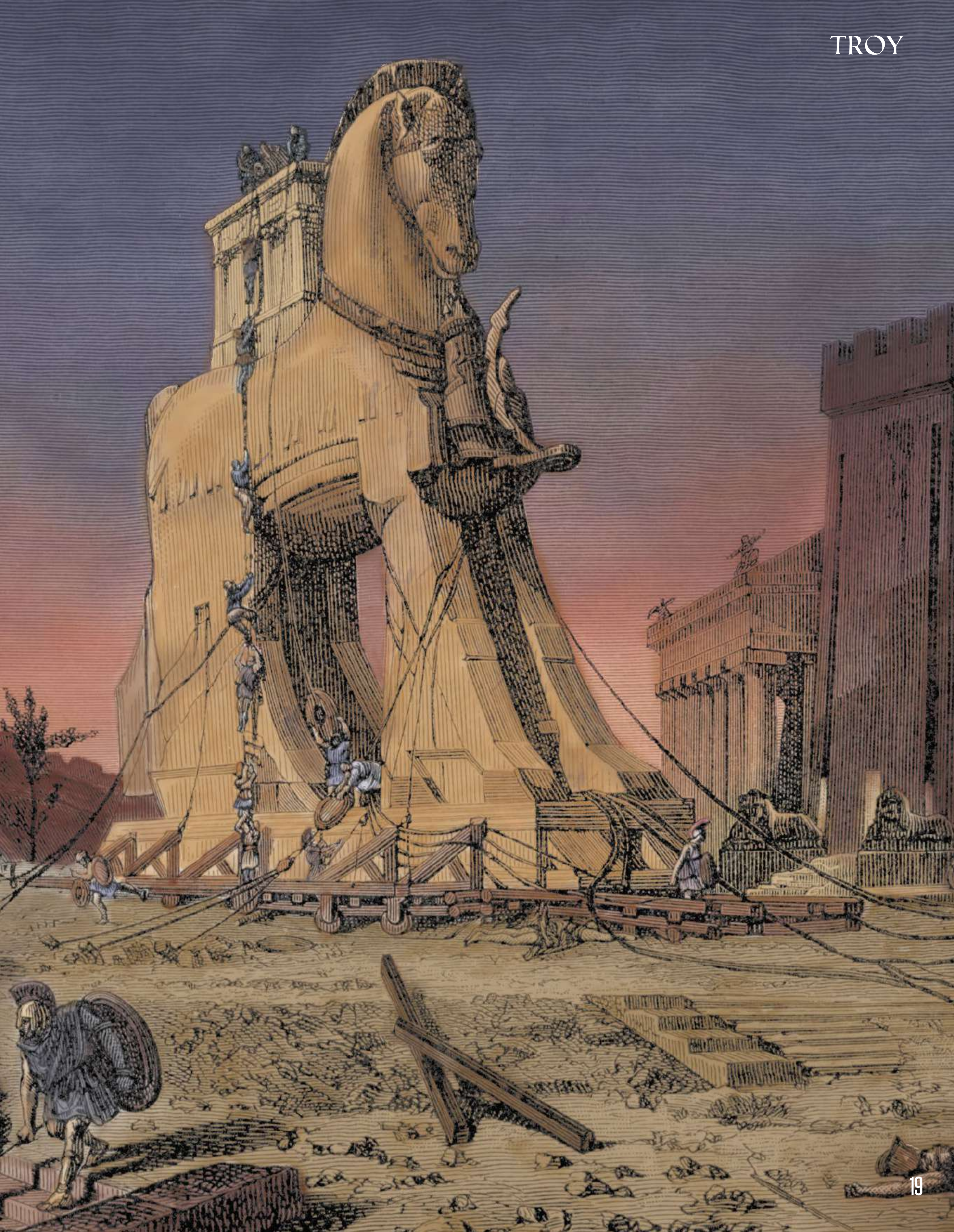
This once seemingly mythical city was the centre of the Ancient Greek world and the setting for some of the most celebrated works in classical literature

TURKEY
TROY

The ancient city of Troy was mythologised by one of the greatest writers in Ancient Greece: Homer. His epic poem *The Iliad* depicts the events of the Trojan War between the wider Greek people led by the warrior-like Agamemnon and the people of the city of Troy under King Priam. Until the 19th century, every aspect of Homer's tale in which the Greek gods descend from Olympia and engage in battle was seen entirely as a work of fiction; the city of Troy was largely thought to be an invention. However, that changed with the discovery of the ruins of a city in western Turkey in 1870 that fitted its descriptors, then the discovery of further settlements dating back to the Bronze age, which seemed to confirm that Troy, or to give it its modern name Hisarlik, was once a real city.

It was the German businessman Heinrich Schliemann (1822–1890) who first discovered the city. Having made a considerable fortune in his business dealings, he retired at 46 and devoted the second half of his life to finding Troy. The son of a clergyman, he was given Ludwig Jerrer's *Illustrated History of the World* as a Christmas present by his father as a boy. The book contained an illustration of the Trojan War that fascinated and inspired him to track down the city that was otherwise thought to have been a myth. After excavating at various sites in Greece, he finally discovered what he was looking for in what is today Turkey, and what was, in Homer's time, Asia Minor.

Troy was settled for around 3,000 years before being abandoned during the late Roman era. Today it stands four miles away from the sea, which does not fit with Homer's account. However, hydrologists



have recently established that the bay surrounding Troy has changed significantly over the past 10,000 years. As Carol G Thomas and Craig Conant explain in their book *The Trojan War*, the evidence suggests that there was a narrow coastal plain around the bay of Troy, which could accommodate the landing of ships, which has since dried up. They argue this "makes a great deal more sense of the Homeric references" and has convinced even the sceptics that Hisarlik is the remains of Troy.

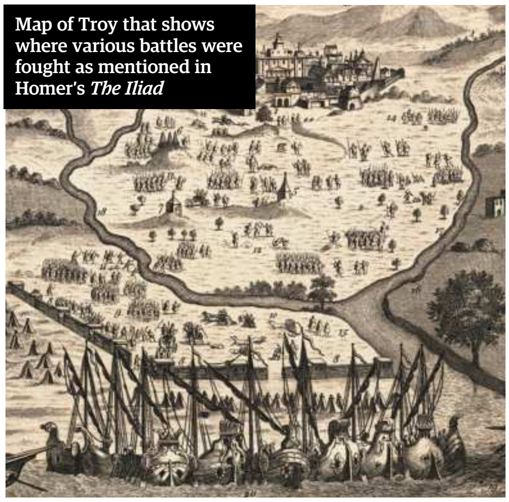
The city was re-built and expanded over its life, and these versions have been categorised by archaeologists into nine different cities: Troy I – Troy IX, though some argue that this is too simplistic. *The Grove Encyclopedia of Classical Art and Architecture* suggests that the different cities should be seen as "broader bands" that incorporate about 50 different building phases.

Troy I – V were Bronze Age structures that acted as a centre for the largely pastoral, rural community, typical of the Bronze Age, that lived in the surrounding fields. The second Troy was the first to have its own acropolis, a high mound where the most important buildings stood, often built as a shrine, imbued with religious qualities. The acropolis of Troy II was where the king had his palace, made of brick and constructed in a Megaron plan, known for its open porches, columns and other open spaces. Here we can see the middle-eastern influence on the city. Troy II burned down, but a host of Bronze Age treasure (mistakenly labelled Priam's treasure by Schliemann, after the King of Troy from the later Homeric period) survives. It contains a collection of relatively simple but intriguing golden plates and beats, and most striking of all, a series of golden diadems. Later archaeologists and studies have disputed the claim that Schliemann found the treasure in one hoard, but collated different treasure from across the site.

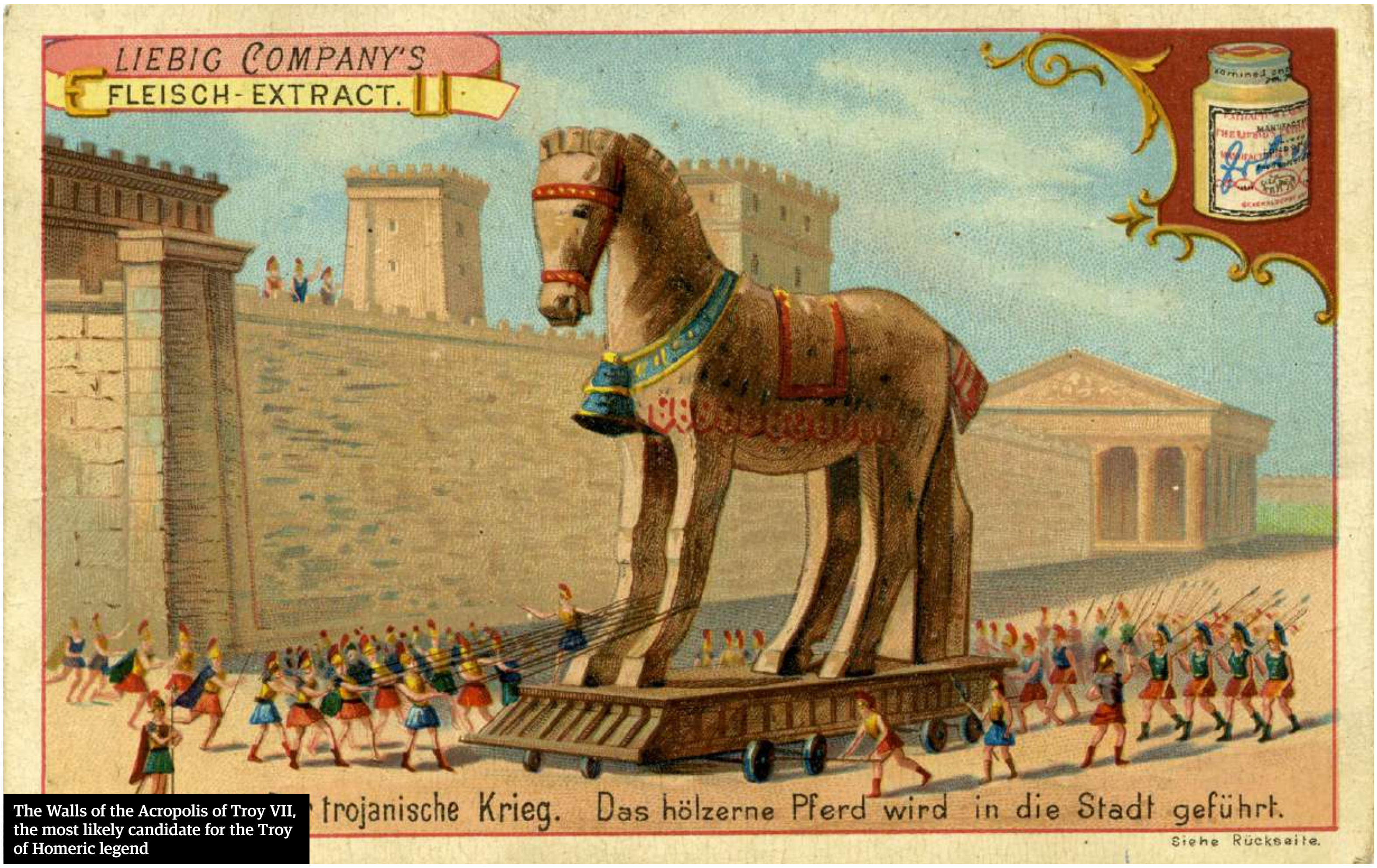
The citadels of the later Troy cities were more fortified, suggesting that the fire that destroyed the second Troy was started deliberately by an invading force, or the inhabitants of the later cities felt the need to fortify Troy for some reason. The buildings were also made of stone rather than mud brick.

The inhabitants of Troy VI and Troy VII were the first to settle horses in the area. The residents of the middle Troys built up the city considerably. One of their crowning achievements must have been the famous limestone city walls that rose to five metres (17 feet) and were 140 metres wide. They also had brick watchtowers, making the city appear impenetrable. Troy VI and Troy VII have both been candidates for the Troy of Homeric legend, but the apparent destruction of Troy VI by an earthquake doesn't tally with the famous story of the Trojan Horse. Greek soldiers abandoned the battlefield, leaving behind only a giant wooden horse for the Trojans to collect as a trophy. But unbeknownst to them, the horse was hollow and filled with Greek

> "The inhabitants of Troy VI and Troy VII were the first to settle horses in the area"



Map of Troy that shows where various battles were fought as mentioned in Homer's *The Iliad*


LIEBIG COMPANY'S
FLEISCH-EXTRACT.
trojanische Krieg. Das hölzerne Pferd wird in die Stadt geführt.
Siehe Rückseite.

The Walls of the Acropolis of Troy VII, the most likely candidate for the Troy of Homeric legend

soldiers, who waited until the dead of night before entering Troy and burning it to the ground.

Instead, it is Troy VII that was re-built after the earthquake that is today thought to be the real Homeric Troy, and its dates, having thought to have been established between 1300-1200 BCE, also match more closely with what we know of the city.

We can be more specific because Troy VII is often separated into Troy VIIa and Troy VIIb. American archaeologist CW Blegen argues that a "reasonable estimate" is that Troy VIIa survived for only "one, or at the most two, generations." It was this city that was destroyed during the Trojan War and re-built by survivors as Troy VIIb.

Troy VIIa was a tightly packed city. The tall, fortress-like walls were repaired where necessary and did not need completely re-building, but what remained of Troy VI was flattened and re-built.

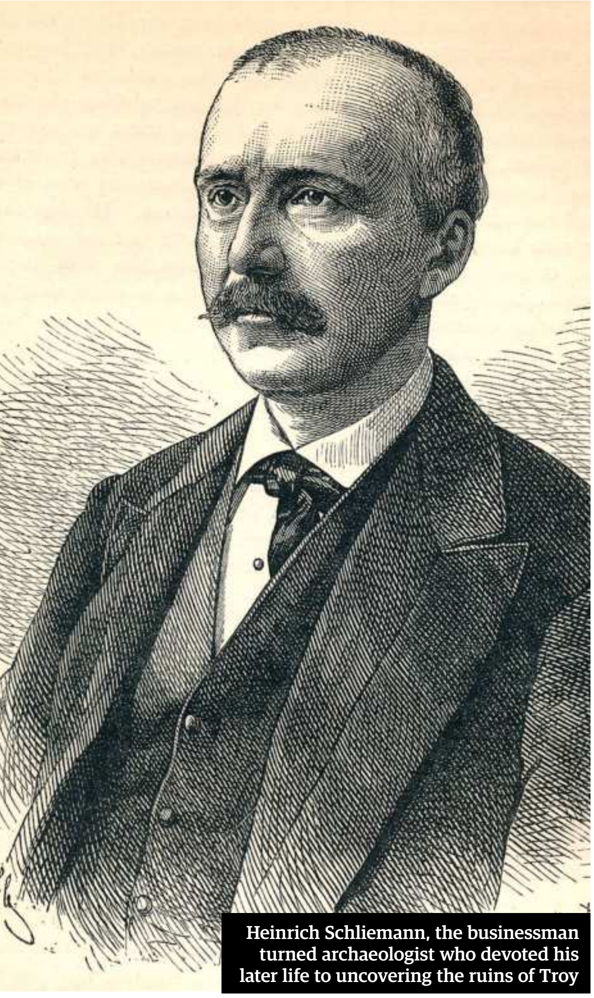
One of the most intriguing aspects of it was the fact that every house had at least one storage jar, known as a pithoi, possibly even as many as 20, that were dug below the floor to enable stockpiling food in preparation for a siege or invasion.

> Each time Troy was destroyed, the citizens would build upon the previous settlement, causing the layers to pile on one another

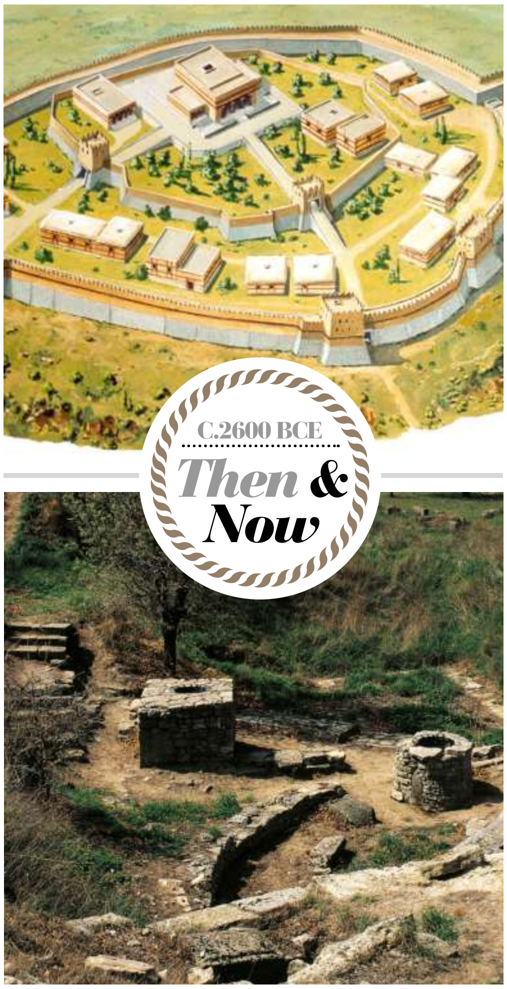
Found on the site was also a considerable amount of pottery, much of it in the same style as Troy VI, and predictably some of it Mycenaean - Late Bronze Age from mainland Greece and the surrounding islands - but some of it was different and had an orange-tan glaze.

Troy VIIb was re-built following the Trojan War, and lasted for longer but was much less advanced. It soon fell into decline, and by 1000 BCE the inhabitants had disappeared and the city was abandoned. In 700 BCE the city was restored under the name Ilion - Troy VIII.

In 85 BCE, the Romans invaded and ransacked Troy VIII. The final settlement, Troy IX, was a Roman town. Emperor Augustus bulked it out with lavish buildings including a sanctuary and grandstand, and there was even a Temple of Athena, the Greek Goddess of Wisdom. The city was soon eclipsed following the founding of Constantinople by Emperor Constantine in 324 CE and although there were much smaller settlements in the 12th and 13th centuries, the stones from the temple were taken out and used elsewhere, and the site largely fell into disrepair. After two millennia, the final curtain fell on arguably the greatest city of the ancient world outside Rome.



Heinrich Schliemann, the businessman turned archaeologist who devoted his later life to uncovering the ruins of Troy



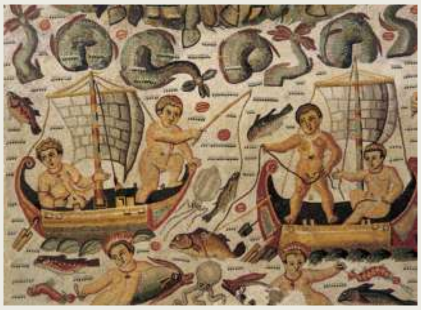
C.2600 BCE

Then & Now

Three theories Troy was settled

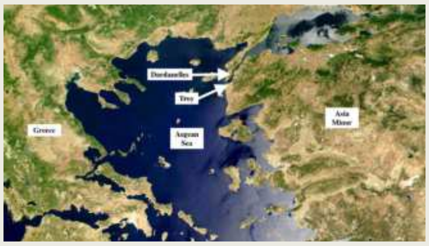
Fishing

The harbour, now since dried up, was once swimming with fish, according to archaeological evidence. This made it a good base for the Bronze Age descendants of early Palaeolithic and Neolithic peoples of the Troad region in Asia Minor, looking for a suitable settlement.



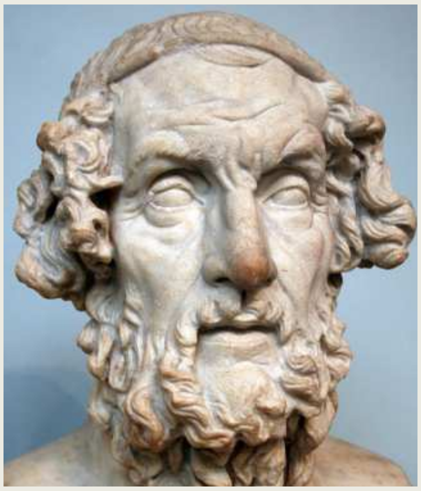
Controlling the seas

The 39 mile (61km) stretch of water that makes up the Dardanelles is one of the most important straits of water, because it links Europe with Asia, and the Aegean Sea with the Black Sea, and it also straddled Greece and Turkey. Troy was in a perfect location for controlling it.

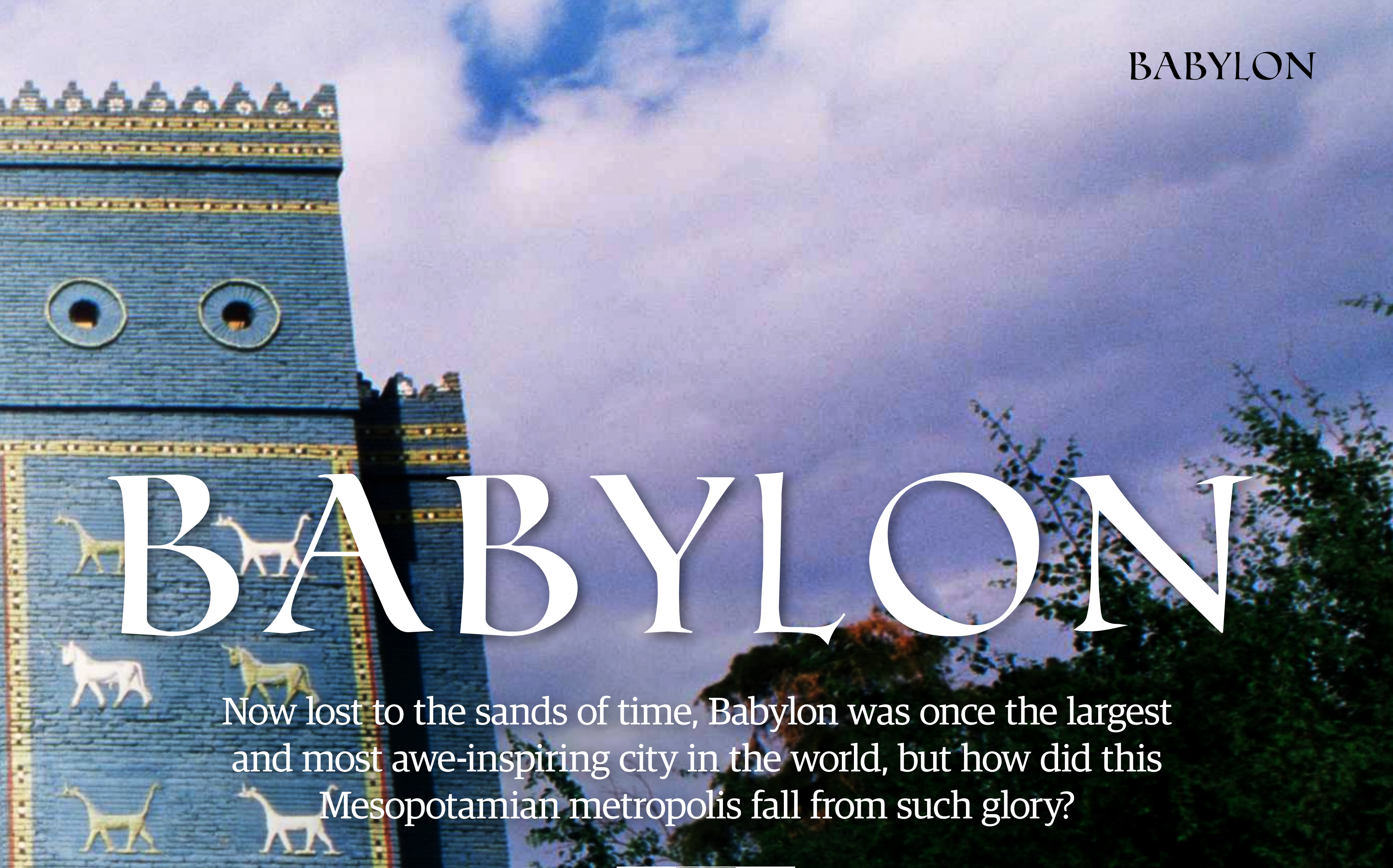


In Greek myth

In Homer's *The Iliad* and in the 2nd century book of Greek myths, *The Bibliotheca*, Troy was founded and named for Tros, the son of Erichthonius, 'the richest of mortal men'. Tros' son was Ilus; Troy is sometimes referred to as Ilion. Ilus' grandson was Priam, who was king during the invasion of the Greeks.

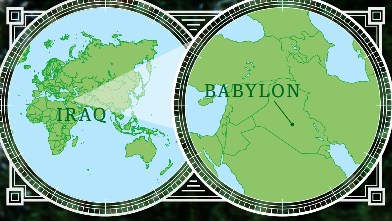


© Alamy, Getty Images



BABYLON

Now lost to the sands of time, Babylon was once the largest and most awe-inspiring city in the world, but how did this Mesopotamian metropolis fall from such glory?



Babylon! The most famous of cities. The centre of civilisation. The majestic home of the Hanging Gardens. To imagine what it must have been like to walk the ancient city's cedar-lined roads, sail past its awesome walls on the snaking Euphrates River or ascend its mighty ziggurat tower contended by some to be the biblical Tower of Babel – that is the stuff fantasy is made of. What sights this city would have to show, what tales it would have to tell...

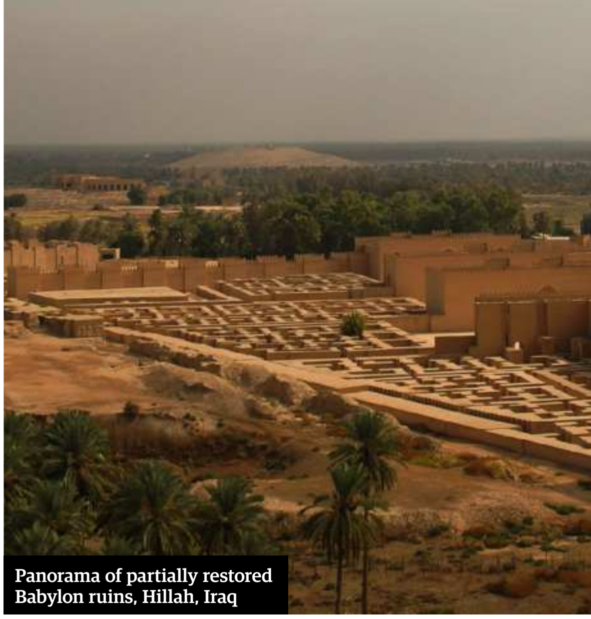
However, today Babylon is reduced to rubble, ruin and pitiful reconstruction in a country wracked by conflict. Suffering from years of war and total neglect, the once world-leading Mesopotamian capital is a ghost of its former self, trapped within an Iraq that has neither the resources nor the will among those in power to see this ancient hub of culture, commerce and learning excavated or maintained for future generations.

Home at one time or another to Hammurabi, Nebuchadnezzar and even Alexander the Great, Babylon was the foremost city of its age. Emerging from a small settlement that formed between the Euphrates and Tigris Rivers in the late-third millennium BCE, Babylon soon grew due to the fertile terrain and bountiful natural resources in the region into a prosperous and independent city-state under the rule of the Akkadian peoples.

And so it remained until Hammurabi became the first king of the Babylon Empire in 1792 BCE. Upon his ascension Hammurabi undertook a series of wars across Mesopotamia, winning much of the surrounding territory and establishing Babylon as the capital city. During this first period of the empire, Babylon was transformed into an unparalleled centre for culture and learning, with Hammurabi establishing the Code of Hammurabi - laws that governed Babylonia - and pushing through the development of many civic structures.

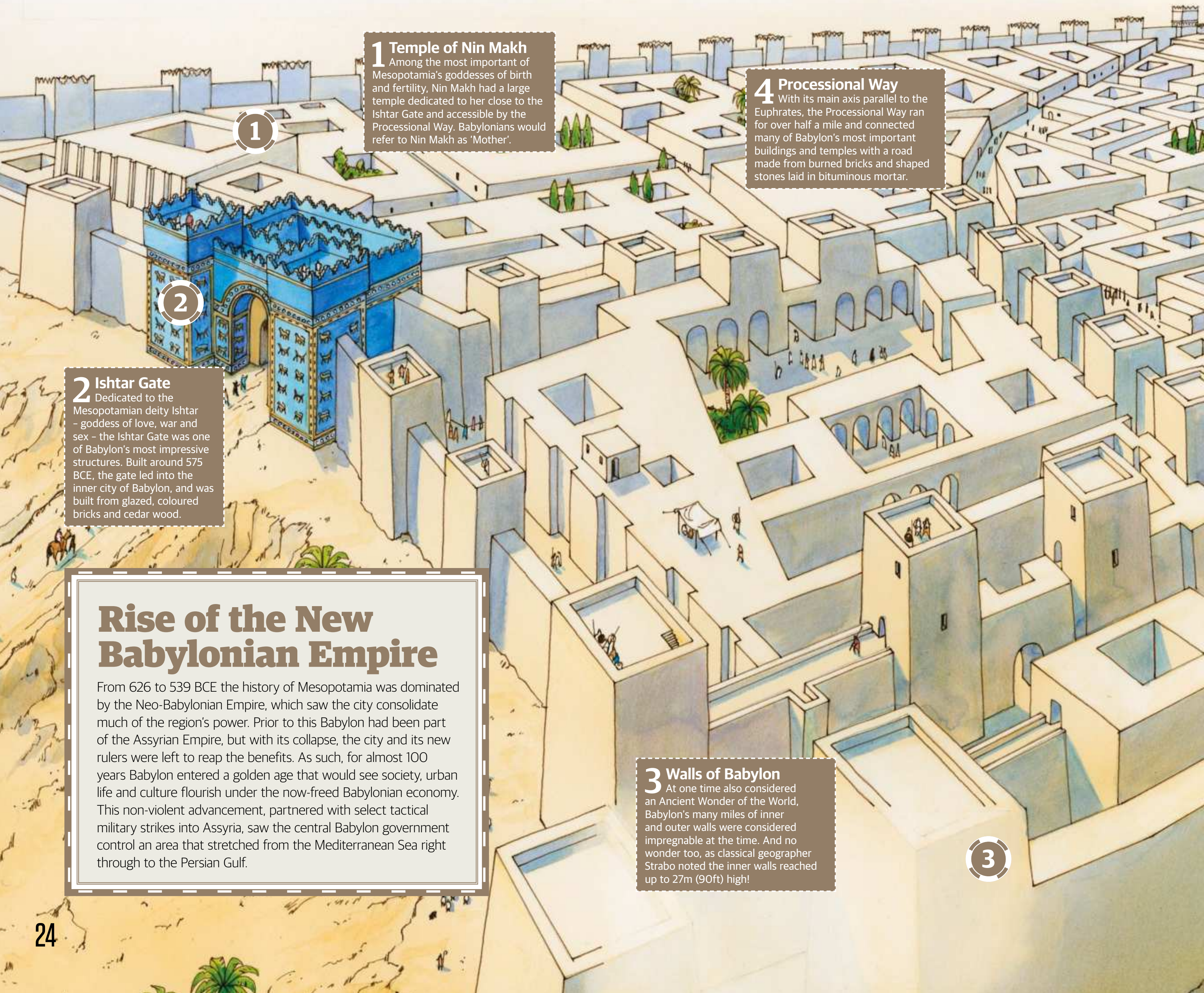
While Hammurabi's influence would cease with his death, despite a series of later invasions - first by the Hittites and Kassites and then by the Neo-Assyrian Empire in 911 BCE - Babylon continued to grow and made ever-more scientific discoveries. As such, by the time a Neo-Babylonian Empire emerged to once again reclaim power and overthrow the Assyrian rule around 605 BCE, the stage was well and truly set for Babylon to become the most important city that Earth had ever seen.

From its striking and technically advanced architecture, through to its introduction of cutting-edge agricultural processes (such as irrigation) - not to mention its redefining developments in astronomy - Babylon strived to be, and arguably reached, the pinnacle of civilisation. It prospered over several centuries and under a series of rulers - including King Nebuchadnezzar II, who built the amazing Ziggurat of Etemenanki, Ishtar Gate and, most famous of all, Babylon's Hanging Gardens.



Panorama of partially restored Babylon ruins, Hillah, Iraq

TOUR OF BABYLON



1 Temple of Nin Makh Among the most important of Mesopotamia's goddesses of birth and fertility, Nin Makh had a large temple dedicated to her close to the Ishtar Gate and accessible by the Processional Way. Babylonians would refer to Nin Makh as 'Mother'.

4 Processional Way With its main axis parallel to the Euphrates, the Processional Way ran for over half a mile and connected many of Babylon's most important buildings and temples with a road made from burned bricks and shaped stones laid in bituminous mortar.

2 Ishtar Gate Dedicated to the Mesopotamian deity Ishtar – goddess of love, war and sex – the Ishtar Gate was one of Babylon's most impressive structures. Built around 575 BCE, the gate led into the inner city of Babylon, and was built from glazed, coloured bricks and cedar wood.

Rise of the New Babylonian Empire

From 626 to 539 BCE the history of Mesopotamia was dominated by the Neo-Babylonian Empire, which saw the city consolidate much of the region's power. Prior to this Babylon had been part of the Assyrian Empire, but with its collapse, the city and its new rulers were left to reap the benefits. As such, for almost 100 years Babylon entered a golden age that would see society, urban life and culture flourish under the now-freed Babylonian economy. This non-violent advancement, partnered with select tactical military strikes into Assyria, saw the central Babylon government control an area that stretched from the Mediterranean Sea right through to the Persian Gulf.

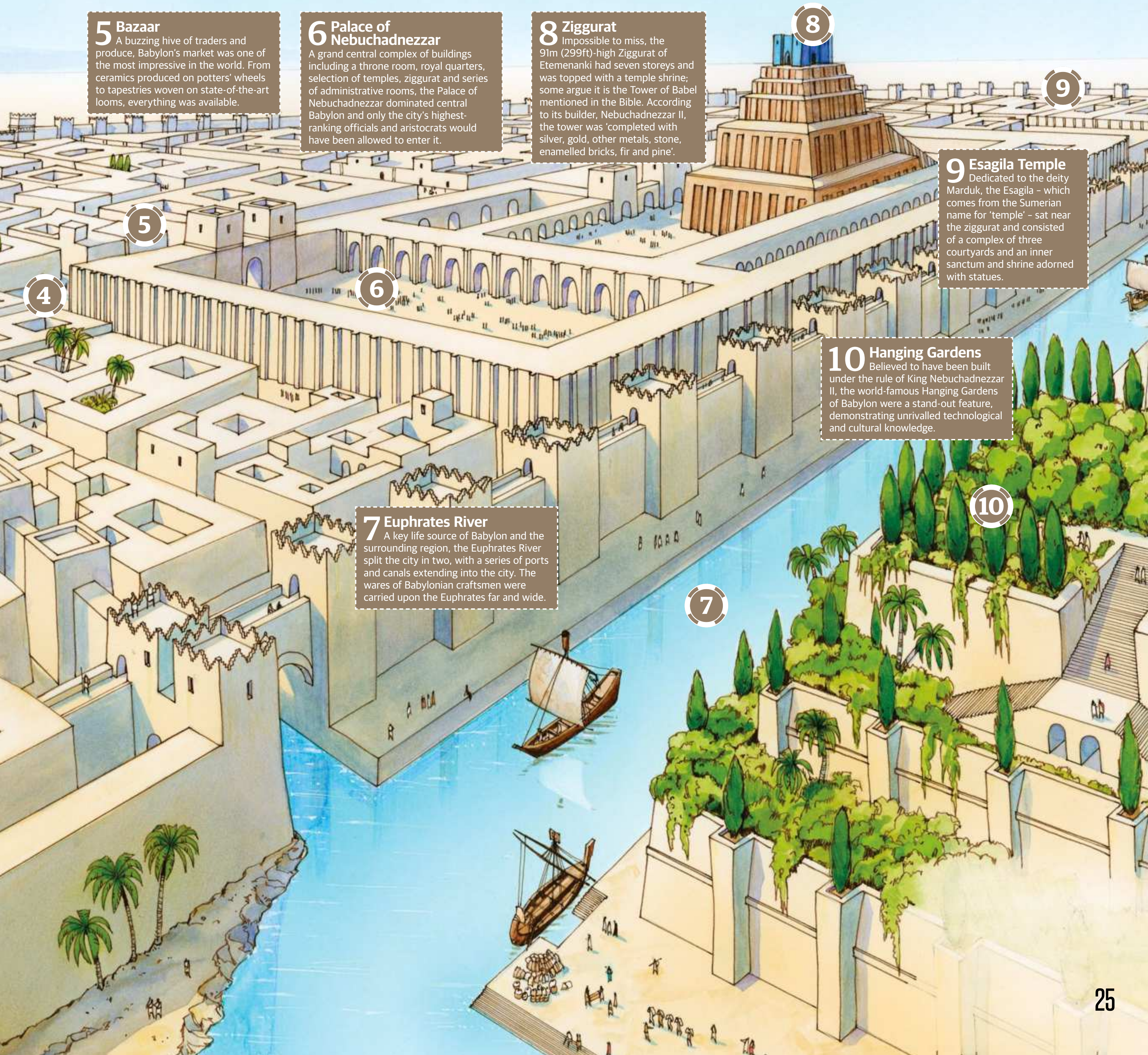
3 Walls of Babylon At one time also considered an Ancient Wonder of the World, Babylon's many miles of inner and outer walls were considered impregnable at the time. And no wonder too, as classical geographer Strabo noted the inner walls reached up to 27m (90ft) high!

Alexander's Great metropolis

Following Alexander the Great's victory over the king of the Persian Empire, Darius III, at the Battle of Gaugamela in 331 BCE, Babylon was left unprotected from a Hellenistic advance that would not cease until it reached India. By October that year Alexander and his army had reached Babylon and – after ordering his men not to enter or pillage any of the residents' houses – he assumed governance of the great metropolis.

And so began what historical documents imply were the last prosperous decades of Babylon. Alexander realised immediately the strengths of the city and encouraged both trade and learning, while ordering the start of many civic building projects. He also pushed for the sharing of Greek and Persian culture and customs, starting to wear elements of Persian dress himself. Through this cultural interchange many scientific breakthroughs, from agriculture to astronomy, were fed back to the West.

Unfortunately, with Alexander's unexpected death in the Palace of Nebuchadnezzar II in June 323 BCE, much of this advancement slowed and then petered out altogether, with a 40-year war between Alexander's potential successors heralding the end of one of the greatest ever cities.



5 Bazaar

A buzzing hive of traders and produce, Babylon's market was one of the most impressive in the world. From ceramics produced on potters' wheels to tapestries woven on state-of-the-art looms, everything was available.

6 Palace of Nebuchadnezzar

A grand central complex of buildings including a throne room, royal quarters, selection of temples, ziggurat and series of administrative rooms, the Palace of Nebuchadnezzar dominated central Babylon and only the city's highest-ranking officials and aristocrats would have been allowed to enter it.

7 Euphrates River

A key life source of Babylon and the surrounding region, the Euphrates River split the city in two, with a series of ports and canals extending into the city. The wares of Babylonian craftsmen were carried upon the Euphrates far and wide.

8 Ziggurat

Impossible to miss, the 91m (299ft)-high Ziggurat of Etemenanki had seven storeys and was topped with a temple shrine; some argue it is the Tower of Babel mentioned in the Bible. According to its builder, Nebuchadnezzar II, the tower was 'completed with silver, gold, other metals, stone, enamelled bricks, fir and pine'.

9 Esagila Temple

Dedicated to the deity Marduk, the Esagila – which comes from the Sumerian name for 'temple' – sat near the ziggurat and consisted of a complex of three courtyards and an inner sanctum and shrine adorned with statues.

10 Hanging Gardens

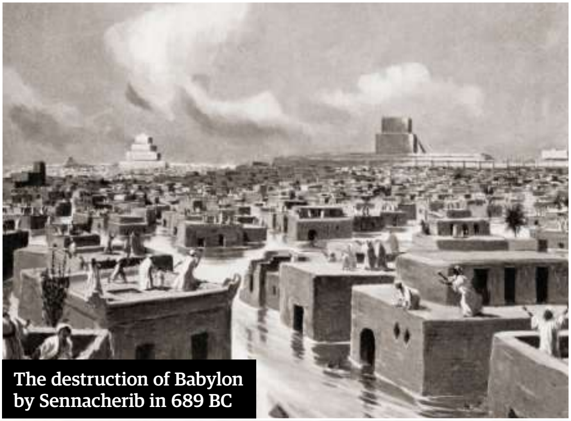
Believed to have been built under the rule of King Nebuchadnezzar II, the world-famous Hanging Gardens of Babylon were a stand-out feature, demonstrating unrivalled technological and cultural knowledge.

Did the Hanging Gardens exist?

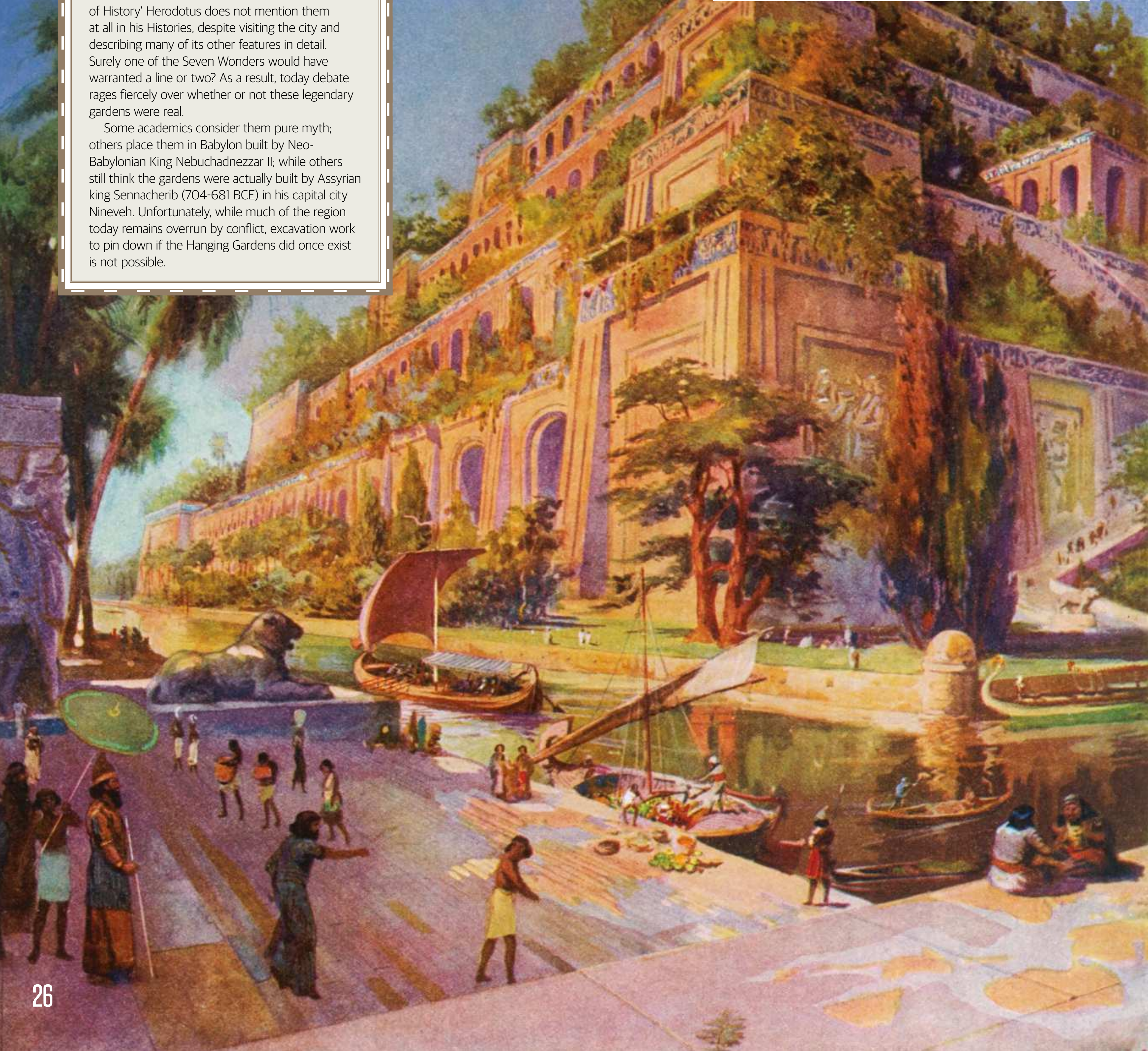
Described with majesty and awe in many historical texts, the Hanging Gardens of Babylon were said to be one of humanity's greatest achievements. They were a multi-tiered, irrigated paradise and in many ways they epitomised the core values of Babylon: beauty, wealth and engineering prowess.

But what if they never even existed? After all, while the Hanging Gardens are mentioned in numerous later texts, no documents from the time have identified them. What's more, 'Father of History' Herodotus does not mention them at all in his Histories, despite visiting the city and describing many of its other features in detail. Surely one of the Seven Wonders would have warranted a line or two? As a result, today debate rages fiercely over whether or not these legendary gardens were real.

Some academics consider them pure myth; others place them in Babylon built by Neo-Babylonian King Nebuchadnezzar II; while others still think the gardens were actually built by Assyrian king Sennacherib (704-681 BCE) in his capital city Nineveh. Unfortunately, while much of the region today remains overrun by conflict, excavation work to pin down if the Hanging Gardens did once exist is not possible.



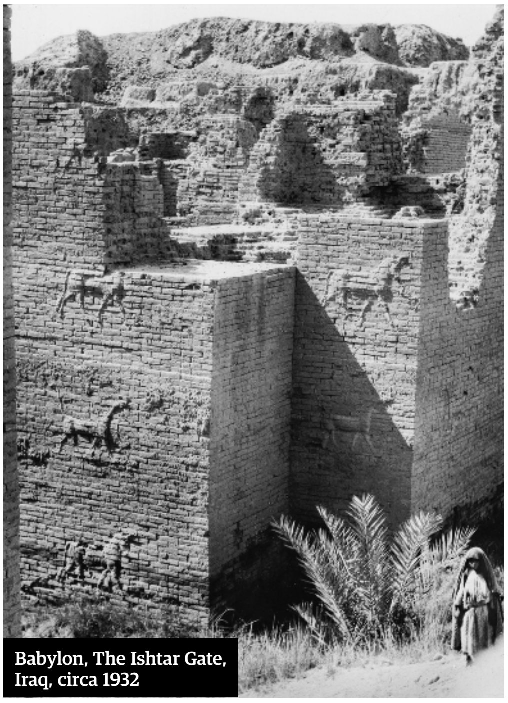
The destruction of Babylon by Sennacherib in 689 BC



> "Babylon was transformed into a centre for culture and learning"

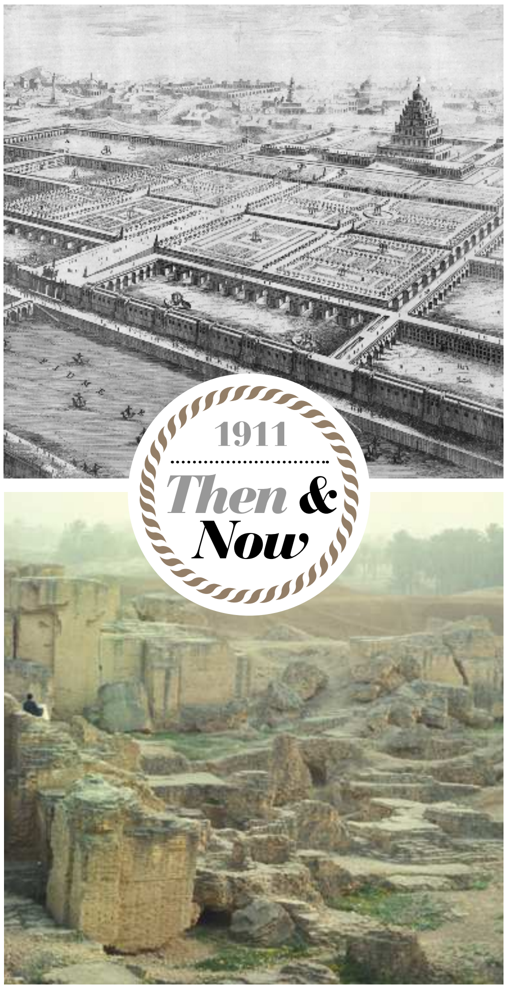
Babylon, Basalt lion, Iraq, circa 1932

Nabuchodonosor's Palace Babylon Iraq Middle East G Thouvenin



Babylon, The Ishtar Gate, Iraq, circa 1932

Lions on Ishtar Gate of Babylon, Pergamon museum, Berlin



What did Babylon ever do for us?

Mathematics
The Babylonians, along with Mesopotamia as a whole, introduced the concept of a base number system, with the civilisation using base 60 to divide time (60-second minute, 60-minute hour, etc) – something that we still use to this day. They also spearheaded the use of geometric shapes and algebra – the latter appearing in their detailed city account records.

Astronomy
No other city in the world advanced astronomy like Babylon. Using their keen grasp of mathematics, Babylonian scholars discovered how to track the movements of planets and stars, as well as discern the phases of the Moon, allowing them to create the very first calendar. Today, all calendars are derived from this original, 12 lunar month calendar.

Medicine
Babylonian medicine was, for centuries, among the most advanced on Earth. By introducing the concept of medical history, physicians soon learned how to identify illnesses and develop crude pills, pastes and bandages to treat them. Indeed, the Diagnostic Handbook from this time contained a list of medical symptoms and corresponding remedies.

Technology
Irrigation systems, weaving looms and metallurgy (science of metals) were all greatly developed in Babylon – the former supposedly used to keep the famed Hanging Gardens lush. Levelling and measuring instruments were also invented, helping to construct Babylon's many complex buildings and temples.

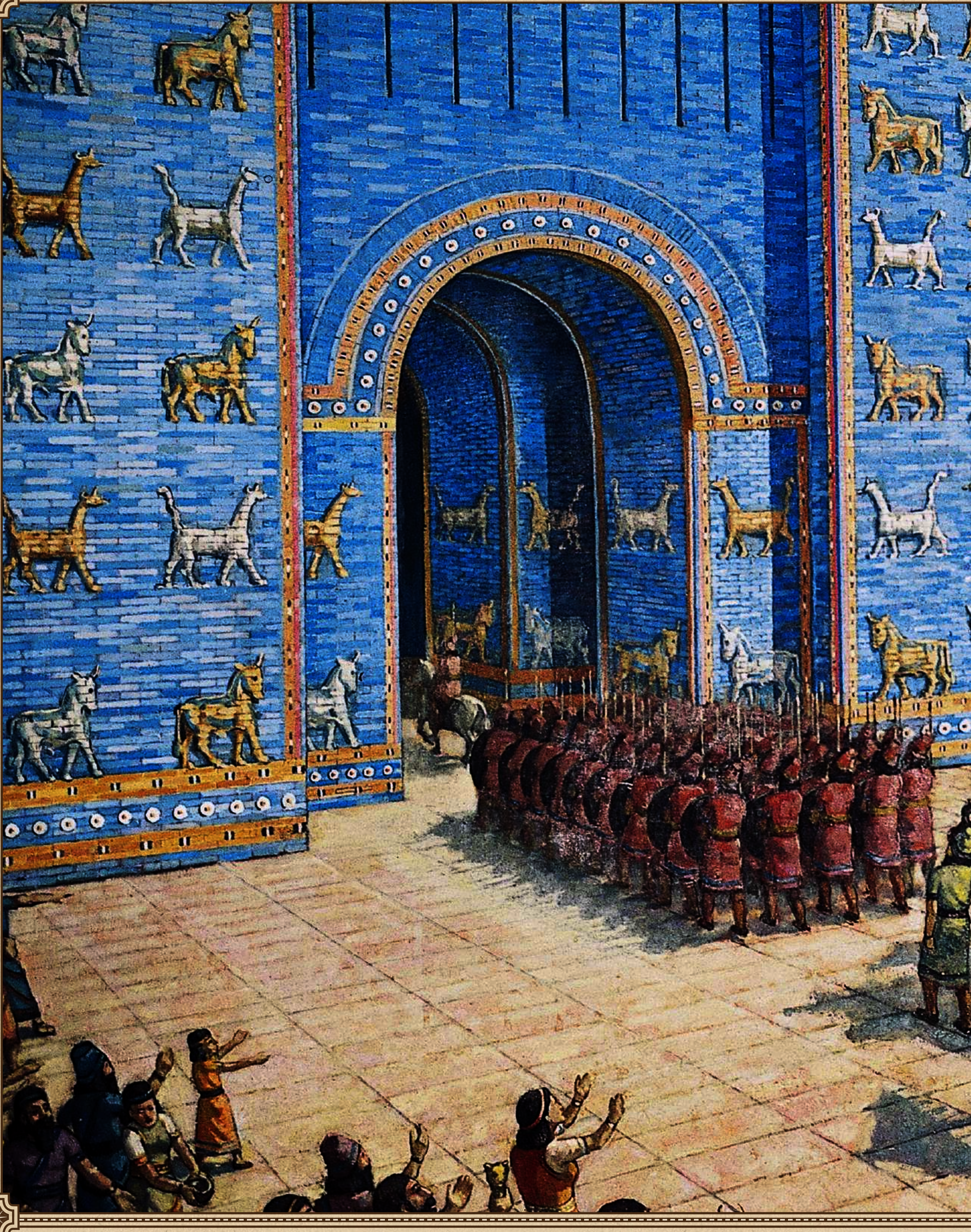
When the city fell into the hands of the Persian Empire in 539 BCE, while its commercial, cultural and academic qualities continued, the city took on a role as an administrative capital, effectively controlling the economy of a region that stretched from the shores of Asia Minor (modern-day Turkey) through to Egypt and beyond.

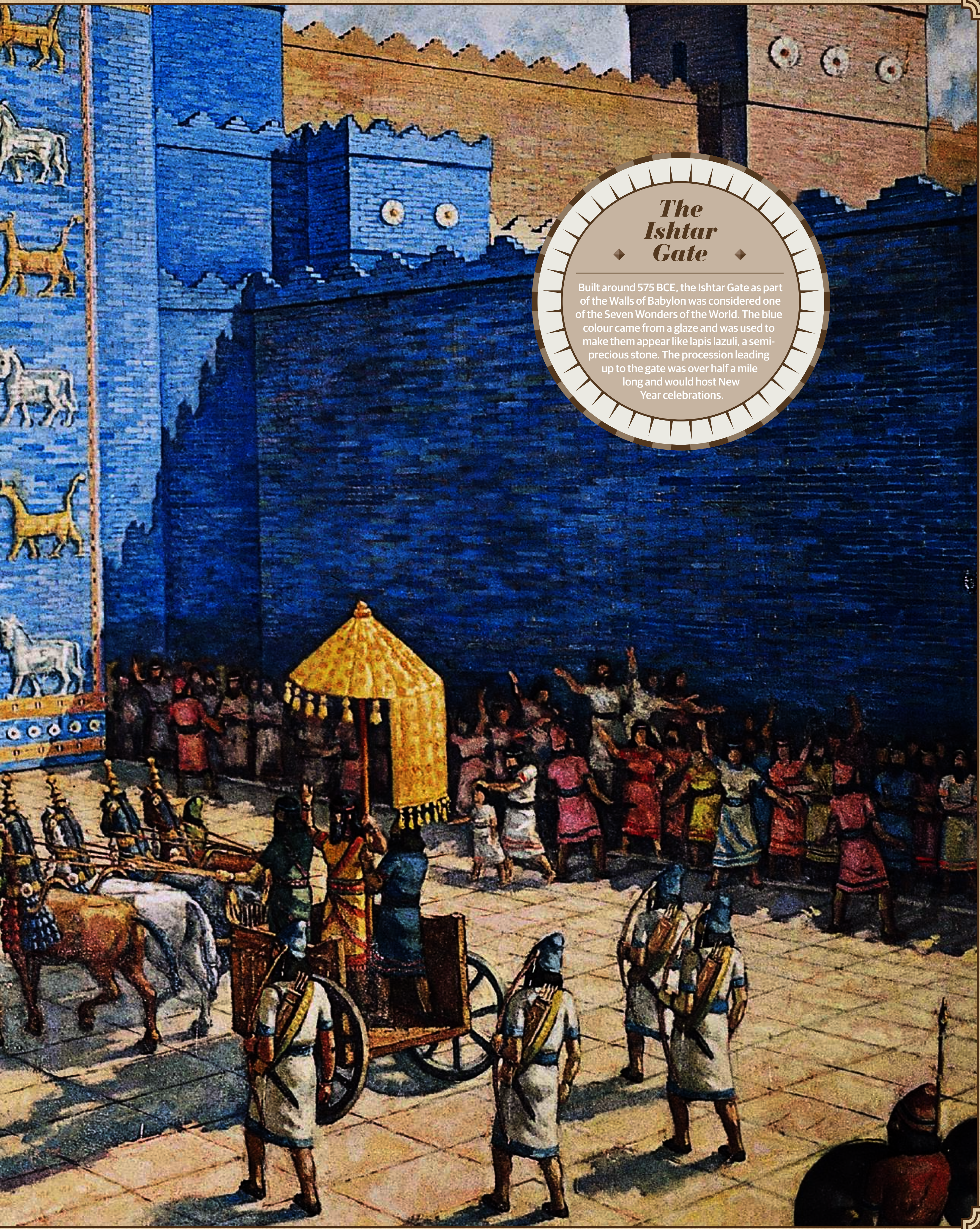
This would seem the natural high point for the city and indeed it was for almost 200 years. But after numerous Persian kings fought a succession of wars against the West, Babylon became increasingly taxed and militarised, leading to a decline in its prosperity by the time King Darius III came to the throne, reigning from 336-330 BCE. The once-bustling canals and waterways now remained largely empty, the temples poorly maintained and the busy bazaars were muted.

However all was not lost at this point. Babylon had one last roll of the dice to rekindle its former greatness and that was, oddly enough, catalysed by another foreign invasion – that of Alexander the Great of Macedon, who took charge in 331 BCE after chasing down the fleeing Darius III, who he had just defeated at the Battle of Gaugamela. Alexander, far from the conquering general, took the city but soon went about a renovation campaign to rebuild Babylon. And it might have worked too, if it were not for Alexander's untimely death in 323 BCE. A period of intense warfare then began between his successors and, by 275 BCE, the constant fighting in the region had become so fierce that the city was all but abandoned, with most of its population migrating to the city of Seleucia in the north. From this point Babylon never really recovered, becoming ever-more run down until it was reclaimed by the desert.

Today, the once-mighty city is a buried ruin, with barely any sign of its former glory evident amid its dusty alleys and crumbling structures. Whether or not this will always be its fate, only time will tell. One thing is clear though – Babylon was one of the greatest cities the world has ever known.

© Alamy, Corbis, DK Images, Getty Images, Mary Evans Picture Library





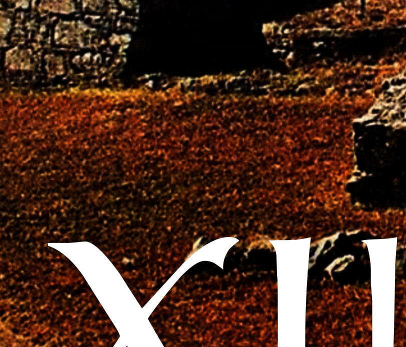
The Ishtar Gate

Built around 575 BCE, the Ishtar Gate as part of the Walls of Babylon was considered one of the Seven Wonders of the World. The blue colour came from a glaze and was used to make them appear like lapis lazuli, a semi-precious stone. The procession leading up to the gate was over half a mile long and would host New Year celebrations.

© Getty Images

TAXILA

A centre of commerce and higher learning steeped in Hindu and Buddhist lore, Taxila flourished for more than 1,000 years


PAKISTAN
TAXILA

Although human habitation in the area dates to the Neolithic period more than 5,000 years ago, the life cycle of Taxila, its development, prosperity and decline, began in earnest with the emergence of trade across the known world in the 7th century BCE. Located at the convergence of three major trade routes, the city flourished.

According to the Greek historian and explorer Megasthenes, these routes led from Kashmir and Central Asia, the western fringe of the Asian continent and east India, connecting Gandhara, or modern Kabul, Afghanistan, to the valley of the great Ganges river. Megasthenes referred to this route as the Royal Highway. The Indian Buddhist *Jataka Tales* include accounts of Taxila, calling the city the capital of the kingdom of Gandhara. Persian records from the 6th century BCE reference Taxila as a major city in the province of Gandhara, on the frontier of the empire. Also prominent in the historical record of Taxila is the writings of two Buddhist monks. Faxian took note of the bustling trade junction circa 450, while Hiuen Tsang recorded his impressions circa 630.

Located approximately 35 kilometres from the modern city of Rawalpindi and 30 kilometres from Islamabad, both positioned to the north west, the settlement's original Sanskrit name, Takasila, which translates as 'city of cut stone', was revised in Greco-Roman literature as Taxila. Also described as the ancient capital of eastern Punjab, the site is a fascinating archaeological trove relating to several historical periods.

While evidence of early settlement predates 7th century BCE and indicates a thriving trade centre as early as 900 BCE, the pages of the Hindu epic *Ramayana* relate that Taxila was founded by Bharata, the younger brother of Rama, the hero of the *Ramayana* and an incarnation of the Hindu god Vishnu. Bharata named the city for his son, Taksha, whom he installed as its first ruler. Initially, the city was located on a site known as Bhir, a hill dominating the approaches of the Tamra Nala river, a tributary of the mighty Indus. As its cultural prominence grew, Taxila is believed to have been the place where a second Hindu epic, *Mahabharata*, was first recited, while a university was established there that thousands travelled to in order to receive an education.

The archaeological record suggests that the early city was divided with a residential area to the east and a ceremonial or religious centre to the west. Archaeologists maintain that the discovery of a 'pillared hall' supports the theory of ceremonial purpose, indicating that Taxila may well be the site of the oldest known Hindu shrine in the world.

In 516 BCE, Persian King Darius waged a war of conquest in central Asia. Occupying the region of Gandhara, surrounding Taxila, he proceeded to claim the Indus Valley and annexed the entire area, which apparently remained under Persian dominion for more than a century. However, there is little archaeological proof that actually supports this assertion.

"Taxila may well be the site of the oldest known Hindu shrine in the world"

As Alexander the Great and his Macedonian army moved inexorably east, invading India in 326 BCE, Persian influence had waned. King Ambhi, an Indian ruler of Taxila, was engaged in a dispute with a neighbouring monarch, Porus, who governed Pauravas, a region in east Punjab. Historical accounts differ as to whether Ambhi invited Alexander to enter his city or surrendered outright. Alexander allied with Ambhi temporarily and defeated Porus at the Battle of the Hydaspes on the banks of the Jhelum River, leading to Alexander's conquest of all of Punjab. Alexander then compelled the two rival kings to reconcile before leaving lieutenants and veterans of his army in India and returning to Babylon. At the time of the invasion, the Macedonians described Taxila as wealthy, prosperous and well governed.

After Alexander's death in 323 BCE, the Mauryan Empire, which dominated the Indian subcontinent for the following two centuries, took control of the Indus region. Ashoka, the grandson of Chandragupta Maurya, founder of the Empire, served as governor of Taxila during a period of Buddhist ascendance. Ashoka advocated the growth of the religion, and a pair of monasteries, replacing an older worship centre, was constructed. The stupa of the Dharmarajika monastery, a site where Ashoka buried a number of ancient Buddhist relics, remains a well-known landmark.

Greek King Demetrius invaded India in 184 BCE and established a 'second' Taxila at Sirkap across a stream from the original Bhir Mound site. Sirkap was built according to Greek convention in an orderly manner with well constructed buildings and defined streets running in a grid system. The polyglot population included Greeks, Iranians and Indians. Greek architectural influence mingled with those of the Hindu and Buddhist elements in the area. The Buddhist Apsidal temple measured 40 metres by 70 metres, while the Hindu Temple of the Sun and a Jainist sanctuary that resembled a stupa were nearby. The double-headed eagle stupa combined Buddhist and Greek design elements. A Greek temple and Buddhist stupa resembling a Roman temple were also built.

Periods of Sacastane and Parthian rule followed, and Parthian King Gondophares is said to have been baptised into the Christian faith by the Apostle Thomas, although the historical timeline indicates that the Parthian monarch lived before the time of Jesus Christ. Still, the tale indicates the religious diversity that characterised Taxila. During this period, the Greek philosopher Apollonius of

This striking interpretation of Buddha and his attendants resides in a Jaulian monastery at Taxila, and dates to the 5th century BCE

The Dharmarajika stupa was constructed as a burial structure by Buddhist inhabitants of Taxila in the 3rd and 2nd centuries BCE. The Huns inflicted damage on the site in the 5th century, leading to it being abandoned

Tyana visited the city and wrote it was as large as Nineveh, enclosed with Greek-style defensive positions, and its civil layout was similar to Athens.

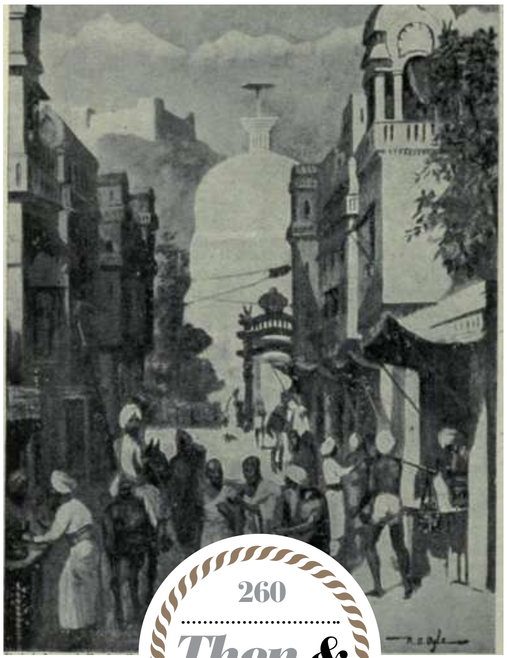
The third incarnation of Taxila, known as Sirsukh, occurred under Kushan rule around 80 CE. A wall, some six metres thick in places, provided protection against invaders. Around 400, Taxila was absorbed into the Gupta Empire, and the Hephthalites and Sveta Huna, two of several Hunish tribes of central Asia invaded during this period. Although these 'Huns' were eventually driven back, the war was so costly that the city of Taxila was unable to regain its previous economic and social status. The Huns heavily damaged the stately Buddhist structures in the city, and much of the population fled.

By the mid 7th century, most of the population had abandoned the city and as trade routes were established elsewhere, Taxila became a commercial backwater and faded into obscurity. When Hiuen Tsang visited, he described the city as "desolate."

During the early 19th century, scholars determined that Taxila's ruins held tremendous historical value. In 1863, Sir Alexander Cunningham began extensive research, discovering that errors in ancient texts had incorrectly placed the location of the lost city. Correcting the error, Cunningham positively identified Taxila, and the rediscovery was underway. Early excavations were supervised by Sir John Hubert Marshall. Among the sites that have been identified are the Bhir Mound, remains of Sirkap and Sirsukh, the Dharmarajika stupa, and at least a dozen others.

Artefacts, such as coins, pottery, reliquaries and sculptures, have been recovered, identified and displayed in a museum, and Taxila has become the most visited tourist attraction in Pakistan. However, the site remains remote. UNESCO designated Taxila a World Heritage Site in 1980, but it is threatened by vandals, plunderers, the ravages of war and modern encroachment. The World Heritage Fund has noted that Taxila is one of a dozen sites across the globe on the verge of irreparable damage or loss.

Taxila was designated a UNESCO World Heritage Site in 1980 mainly for the ruins of the four settlement sites



260

Then & Now

Discovery and preservation at Taxila

Sir Cunningham, the theorist

In 1861, during the British Raj, Sir Alexander Cunningham was appointed archaeological surveyor to the Indian government. Taxila was among a dozen ancient cities that he positively identified. After returning to Britain, he journeyed to India each winter, participated in the excavations at Taxila and at other sites, and went on to produce 24 reports on the progress.

Marshall makes dig discoveries

Director general of the Archaeological Survey of India from 1902 to 1928, Sir John Hubert Marshall began a 20-year excavation program at Taxila in 1913. He laid the foundation stone for the Taxila Museum in 1918. Today visitors to the museum can view many artefacts that were discovered during Marshall's tenure.

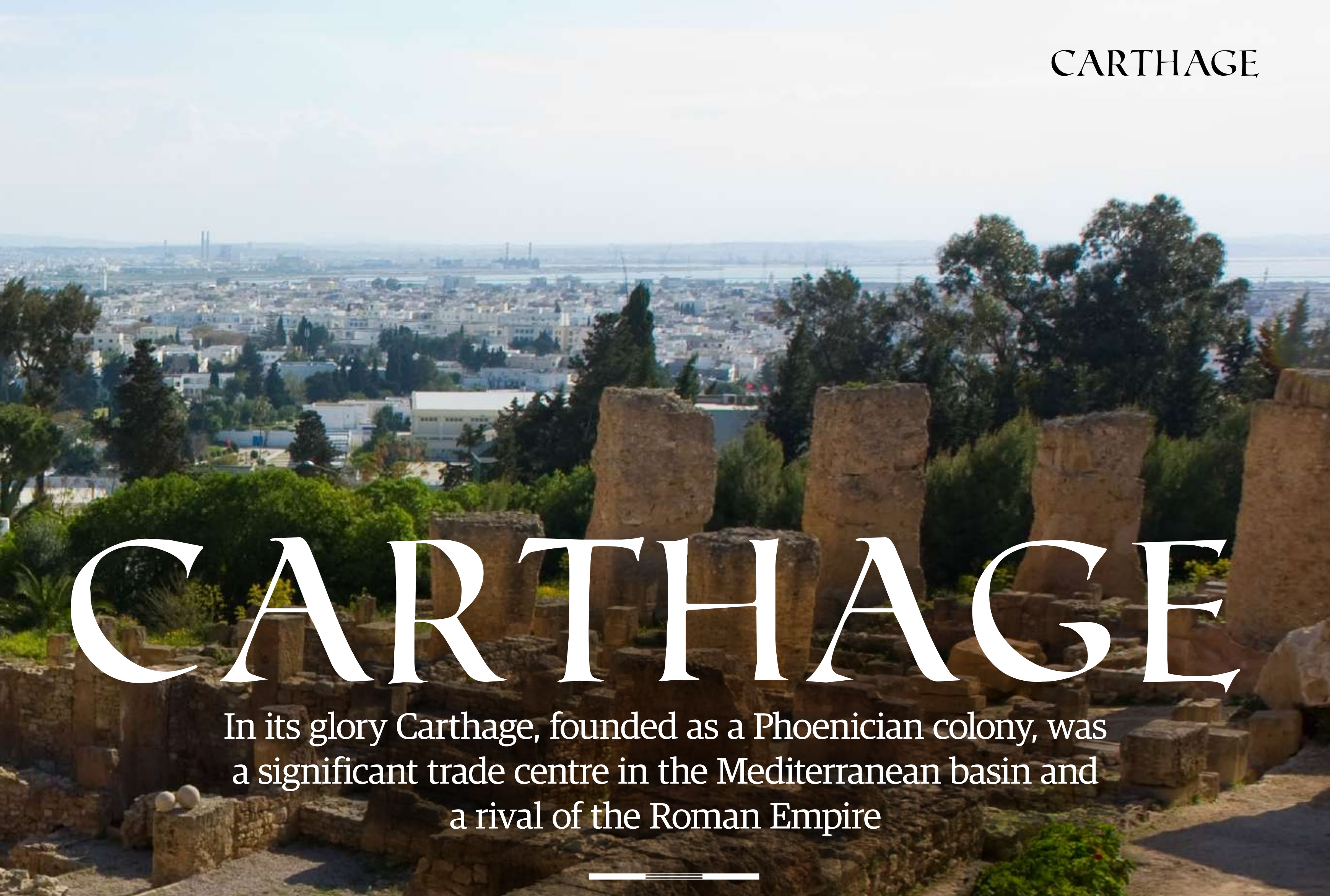
UNESCO seeks preservation

UNESCO

United Nations
Educational, Scientific and
Cultural Organization

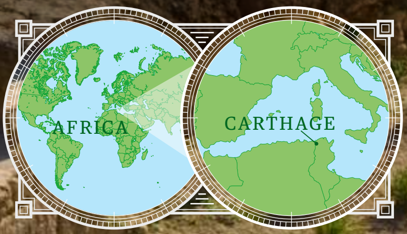
Formed in 1946, the United Nations Educational, Scientific, and Cultural Organization (UNESCO) is dedicated to improving the human condition through science, education, sustainable development and other endeavours, such as the preservation of historical sites. Regional and cultural history projects have brought much-needed attention to the threatened cultural treasures situated around the world.

© Alamy, Getty Images, Muhammad Bin Naveed



CARTHAGE

In its glory Carthage, founded as a Phoenician colony, was a significant trade centre in the Mediterranean basin and a rival of the Roman Empire

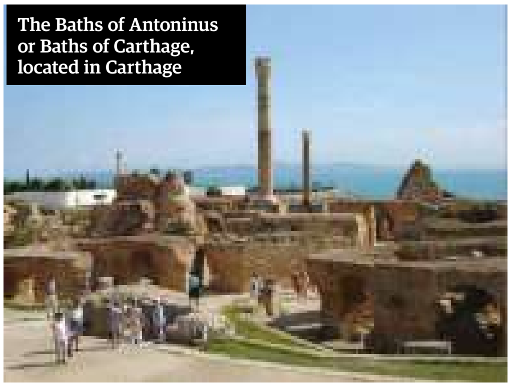


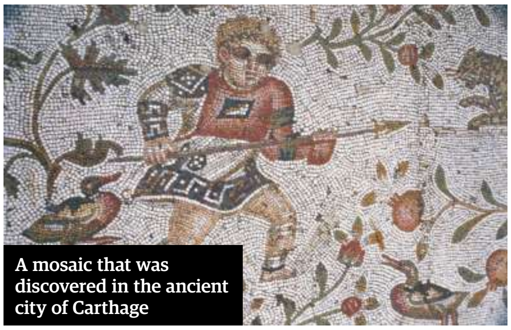
The city of Carthage is remembered both in fact and myth. Its extensive economic and military influence in the Mediterranean are well documented, and its place in lore is secure as the home of Queen Dido, who entertained Aeneas, the Trojan hero turned refugee.

In the 9th century BCE, the legendary queen was said to have founded the city on the shores of the later-named Gulf of Tunis after purchasing land from a native people. The deal called for the purchase of a tract that could be covered by an ox hide, so the crafty Dido cut the ox hide into strips and laid out a claim that grew into one of the great empires of the ancient world. Carthage was one of numerous cities that were built as colonies by the Phoenicians, a seafaring and trading civilisation centred in modern-day Lebanon that flourished along the eastern Mediterranean and extended its influence across the known world.

Because of its extensive maritime commercial activity, Phoenicia needed outposts throughout the Mediterranean, where its ships might find hospitable ports, its trade routes were protected, and resources could be exploited. Carthage was one of several such colonies that were established from the coast of North Africa and the Iberian Peninsula in the west to Asia Minor in the east, and north to the shores of the Black Sea.

In his epic poem, the *Aeneid*, Roman poet Virgil describes Dido as a welcoming queen who falls in love with Aeneas, the legendary warrior who carried his father out of Troy on his back after the Greeks had set the city ablaze and then sailed to Carthage. Aeneas was compelled by the god Jupiter to leave Carthage and venture to the site of Rome.


The Baths of Antoninus or Baths of Carthage, located in Carthage


A mosaic that was discovered in the ancient city of Carthage

Excavations on the hill of Byrsa reveal the depth of the city's ruins and the complexity of Carthaginian stone construction; note the large earthen jar

Heartbroken, Dido committed suicide, flinging herself into a pyre. This story is likely rooted in fact and fiction, containing elements of other historical and mythical accounts of the city's history.

The early Carthaginians built their first structures around a hill known as Byrsa, and were probably governed from distant Tyre and supported by the inhabitants of the already established North African colony at Utica. However, as the Phoenician dominance in trade throughout the region was challenged by the Greeks and Etruscans, Carthage began to emerge from the shadow of Utica and then from the direct control of Tyre itself.

By the 7th century BCE, Carthage had begun to function independently to a degree, establishing its own colonies, revitalising older Phoenician settlements, and assuming a defensive posture against encroachment from Greek, Sicilian and other adventurers. The Punic empire eventually extended across North Africa from the coast of modern Morocco to Cyrenaica, to the southern Iberian Peninsula, western Sicily and numerous islands of the Mediterranean. Carthage's reputation as a martial civilisation developed during the early 6th century with the ascension of General Mago I to the throne. Signed in 509 BCE, a treaty with Rome indicates that the Carthaginians had already exerted military and economic dominance over significant territory in the region, possibly including Sicily. For more than 300 years, from 600 to 265 BCE, Carthage fought a series of wars with the Greek city states for control of the western Mediterranean.

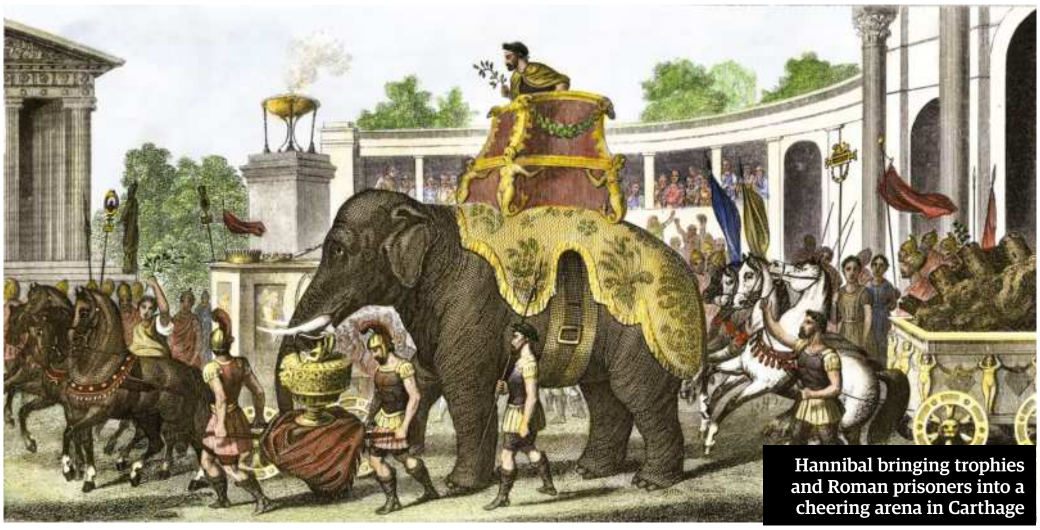
The prestige and power of Carthage were enhanced following the destruction of Tyre by Alexander the Great in 332 BCE. Those who were able to pay had their lives spared, fleeing west to Carthage from the former Phoenician capital. Trade flourished as the city received tribute payments from other locales and with those who had fled Tyre reestablishing commercial enterprises in Carthage. Less than a century after the fall of Tyre, Carthage had emerged as the wealthiest and most powerful city in the Mediterranean. A robust navy provided security for Carthage itself and its merchant fleet that sailed far and wide. Wealthy families constructed palaces, and the modestly affluent lived in comfortable housing. While Carthage's military opened new areas to trade, its bustling waterfront boasted beautiful sculptures fashioned in the Greek tradition and over 200 docks that were seldom empty.

Meanwhile, the colossus of Rome was growing in strength. Subdued under the terms of a series of treaties that prevented infringement on Carthaginian trade in the western Mediterranean, Rome acquiesced to a secondary role until Carthage occupied Sicily. The result was the First Punic War, fought 264-241 BCE. At first, it appeared unlikely the Romans (novices in naval warfare) could stand up to the Carthaginians. However, they constructed innovative warships, utilising the corvus – a ramp that enabled soldiers to board an enemy's ship to give battle. The Romans won significant victories on land and sea, forcing Carthage to sue for peace and extracting heavy reparations payments in silver talents for the next decade.

On the heels of the defeat in the First Punic War, mercenaries in Carthaginian employ demanded payment, and General Hannibal Barca emerged as

> The Baths of Antoninus are the only remaining Thermae of Carthage that date back to the Roman Empire's era

The Mediterranean Sea stretches beyond the ruins of Carthage, a city that once dominated trade across its expanse, boasting a harbour bustling with activity



Hannibal bringing trophies and Roman prisoners into a cheering arena in Carthage

This view of a pair of stunning columns rising from the ruins of Carthage suggests the majesty of the city's architecture during its glory days. Carthage once dominated trade and commerce in the Mediterranean basin, and grew to rival the Roman Empire for preeminence in the region, sparking three wars

Surveying historical Carthage

How ancient Carthage rose to preeminence in the Mediterranean

Expert bio: An assistant professor of history at the University of Tennessee-Chattanooga, Dr Kira Robison holds a doctorate from the University of Chicago, in addition to degrees from the University of Denver and the University of Minnesota. She specialises in later medieval history with a focus on the intersection of medicine, religion and also law in the Mediterranean.

How would you assess the significance of Carthage in the development of the Mediterranean world?

Carthage was a colony but also a trading port, and its location was an ideal hub of Mediterranean trade routes. Circa 600 they began to take over Greek territories in the western Mediterranean, which included Sicily. They were not an agricultural society, like Rome, and probably got most of their staples like grain as taxes or trade goods. They focused on costal trade because of geography of the hinterland, and traded mostly textiles, the famous purple dye, mass-produced ceramics, and bronze ware. Their trade was apparently expansive – there's evidence of tin from Cornwall, and gold and ivory from West Africa.

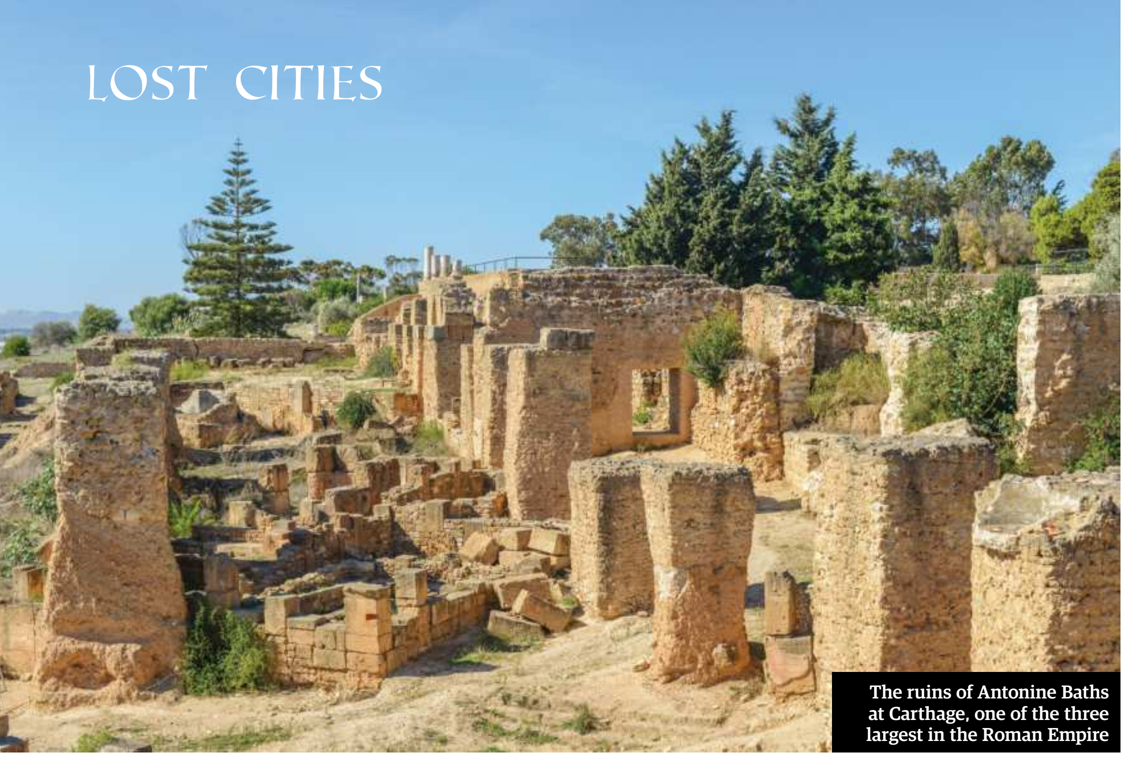
How did Carthage manage to become a rival of the Roman Empire?

Rome had a diplomatic relationship with the Etruscans around the 6th century and with Latin (Roman) coastal towns in the 3rd century. What seems to have gone wrong was the Romans' increasing concerns for the safety of Italy since the Carthaginians had most of Sicily, and the tariffs they were required to pay for trade goods since Rome had no navy and maritime trade of their own. This tension led to the Punic Wars. Eventually Carthage was sacked by the Romans after the Third Punic War, perhaps at the urging of Cato the Elder, who apocryphally ended each speech in the Senate with "Carthage must be destroyed."

How would you assess the combination of myth and fact in the *Aeneid*?

The *Aeneid* is seen as a Roman parallel to the *Odyssey*, and I find that stories like these are often inspired by real events (ie, a city named Troy was destroyed at one point by some people, though not the Greeks), and often are constructed to make ideological connections in one way or another.

An ancient Carthaginian shekel, dated 237-227 BCE



The ruins of Antonine Baths at Carthage, one of the three largest in the Roman Empire

> "When the city fell its grandeur was reduced to ashes"

How to build a great city

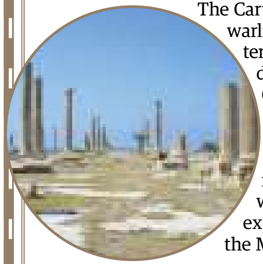
Augment the wealth of Tyre

Tyre, the capital of the Phoenician Empire, intended for Carthage to serve as a western Mediterranean port city and outpost for trade and commerce, paying tribute to the capital and generating revenue.

Develop future trade routes

Largely a maritime trading empire, Phoenicia was constantly in search of new trading partners, and expanded its potential for commerce across the Mediterranean. Carthage could open trade with previously unknown lands and peoples in the west.

Establish a defensive perimeter



The Carthaginians were a warlike people, both in terms of conquest and defence. Initially, Carthage provided a military buffer for the Phoenicians, and later for the empire in its own right, as it went about exercising expansionist ambitions in the Mediterranean.

a great military leader, quelling the uprising. At the same time, Carthage found itself incapable of curbing Roman ambitions as legions occupied the islands of Corsica and Sardinia. Still, the Carthaginian penchant for expansion gave rise to an expedition into Iberia, where Hannibal besieged the city of Saguntum, sparking Roman wrath and the Second Punic War of 218-201 BCE. Hannibal invaded Italy, his army executing a spectacular crossing of the Alps from Spain, and won one of history's greatest tactical military victories at Cannae. However, his resources were limited and he was unable to realise the full fruits of his triumph.

After reaching his high tide at Cannae, Hannibal was defeated at the Battle of Zama, near Carthage itself, by Roman forces under Scipio Africanus. A second cessation of fighting left the Carthaginians again saddled with heavy reparations payments to Rome. Their troubles were compounded by incursions from neighbouring kingdoms and an army was ordered into the field against the invading Numidians. Unlike the Carthginian interpretation, the Romans did not believe the treaty ending the Second Punic War had expired with the last of the indemnity payments. They refused to tolerate the reemergence of a Carthaginian army and the Third Punic War erupted in 149 BCE, bringing about the ruin of the once-mighty Carthaginian Empire.

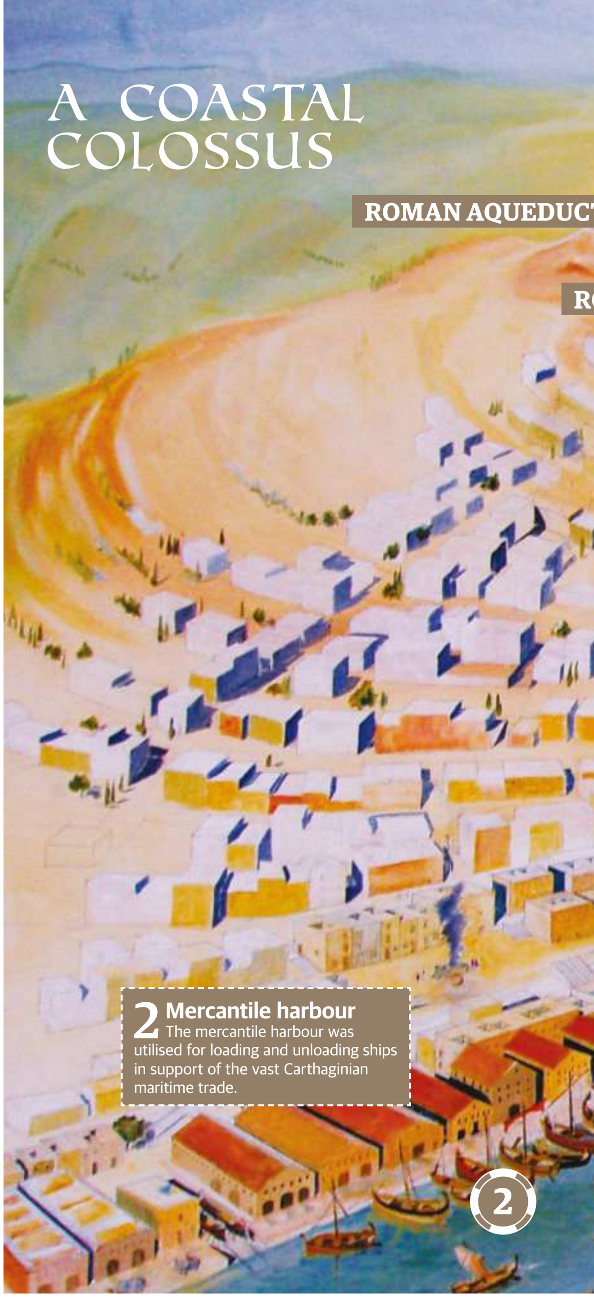
For three years, legions led by Scipio Aemilianus besieged Carthage, and when the city finally fell, its grandeur was reduced to ashes, lost to war but not to memory. Historical accounts relate that not one stone was left standing atop another. The razing of the proud city moved Scipio Aemilianus to tears, and he displayed great magnanimity towards the population. In 122 BCE, the Romans established a colony atop the ruins of the earlier city; however, it soon failed. In 39 BCE, the city was rebuilt based on plans conceived during the reign of Julius Caesar. As a Roman colony, the new Carthage regained its importance, eclipsing Utica for a second time, until the fall of the empire.

During the Christian era, Carthage again rose to prominence. St Augustine brought new interest and energy to the faith and resided in the city for a time. Assailed by adversaries from east and west, Carthage suffered during the Byzantine era, and was eventually conquered by Muslim forces of the Umayyad Caliphate. They established the city of Tunis, and Carthage lay derelict.

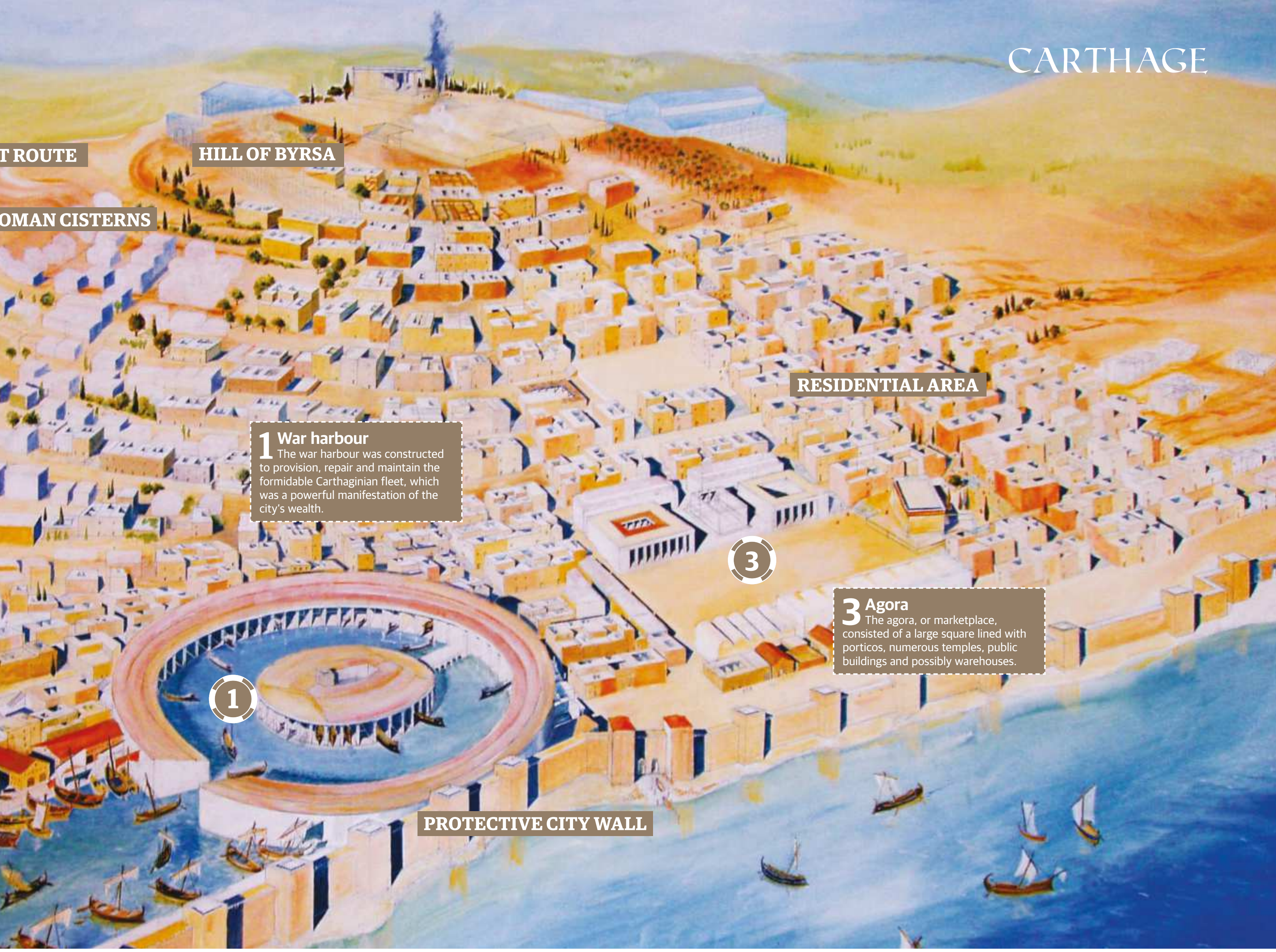
Archaeological exploration of the Carthage site began with the Danish consul, Christian Tuxen Falbe, who conducted the first survey of the area in 1830 while also mapping the city of Tunis for the first time. Falbe published a report of his findings three years later. Interest in Carthage surged in the mid 19th century with the publication of the Gustave Flaubert novel *Salammbô* in 1862. Set in Carthage in the 3rd century BCE, it brought the history of

> Scipio Africanus was a politician of the Roman Republic who served as consul twice, in 147 BCE and then in 134 BCE

A COASTAL COLOSSUS



2 Mercantile harbour The mercantile harbour was utilised for loading and unloading ships in support of the vast Carthaginian maritime trade.



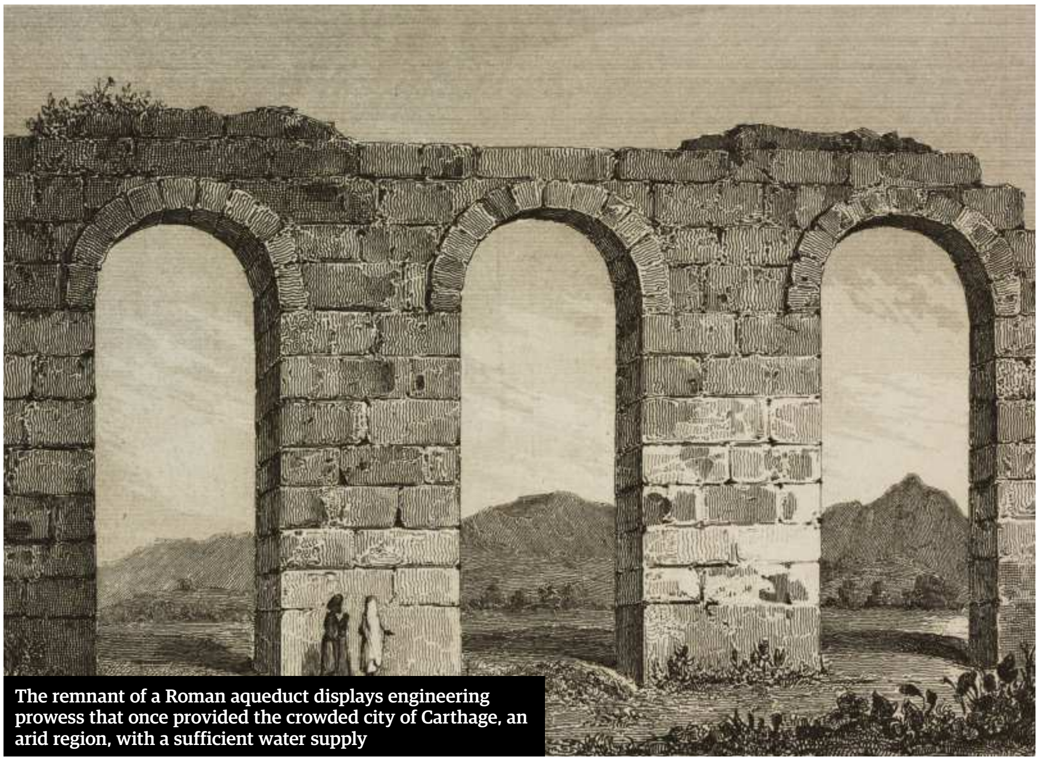
1 War harbour
The war harbour was constructed to provision, repair and maintain the formidable Carthaginian fleet, which was a powerful manifestation of the city's wealth.

3 Agora
The agora, or marketplace, consisted of a large square lined with porticos, numerous temples, public buildings and possibly warehouses.

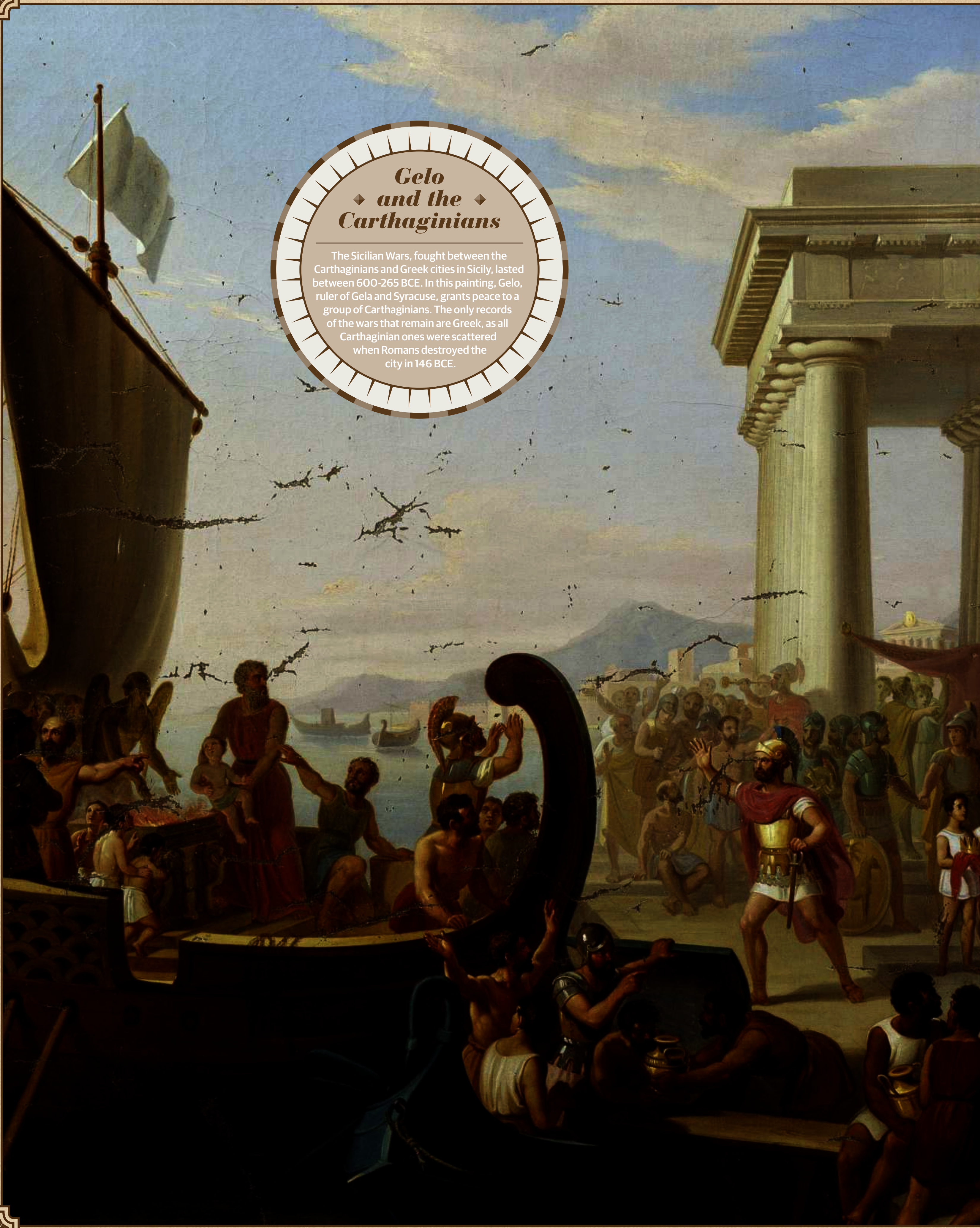
the city to the forefront. In 1875, Cardinal Charles Lavigerie dispatched archaeologist Alfred Louis Delattre to the Tunis area on both a scientific and missionary undertaking. Delattre became the director of the Musée Lavigerie de Saint-Louis de Carthage. He also published six works, including a three-volume account of the museum's holdings.

Auguste Audollent, another French author and archaeologist, worked at Carthage at the turn of the 20th century, interpreting many of the inscriptions on monuments and buildings. He divided the city into four sections: Cartagena and Derméche include Carthage at the height of its power during the Punic period in an area known as the lower city. The upper city includes the area around Byrsa Hill, enclosed by a wall that stood above the expansive harbour. The La Malga section encompasses areas related to the Roman period. Further French excavations during the 1920s led to the discovery of numerous urns containing bones of animals and children, suggesting ritual sacrifices.

Today, the urban sprawl of Tunis has overtaken portions of ancient Carthage, but the site retains its integrity with excavations of a theatre, public baths, forum, temples and residences. Administration, preservation and further excavation work continue.

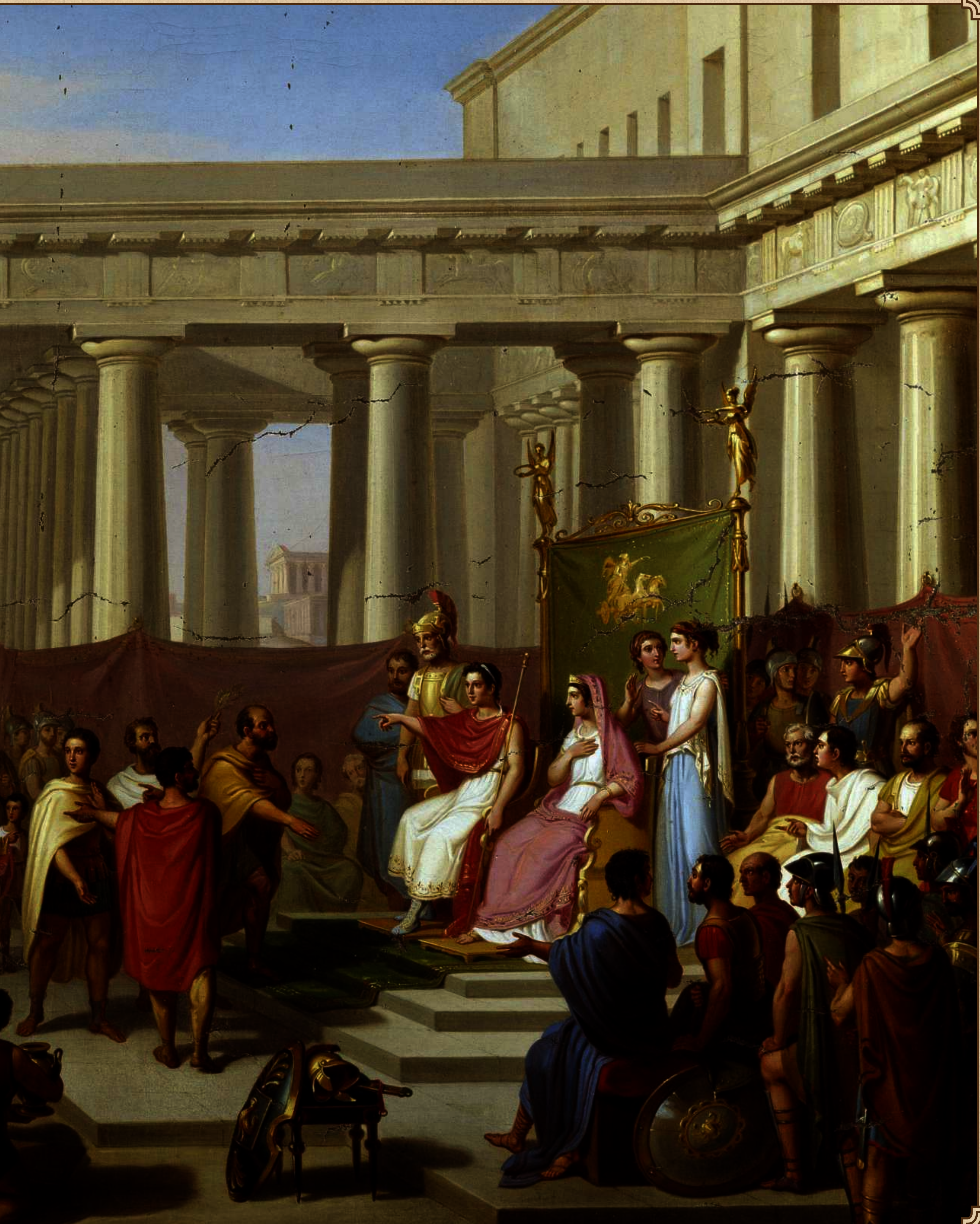

The remnant of a Roman aqueduct displays engineering prowess that once provided the crowded city of Carthage, an arid region, with a sufficient water supply

© Alamy, Calips, Christian Manhart/UNESCO, Farkas Gergely, Getty Images, Pradigue, Véronique Dauge/UNESCO

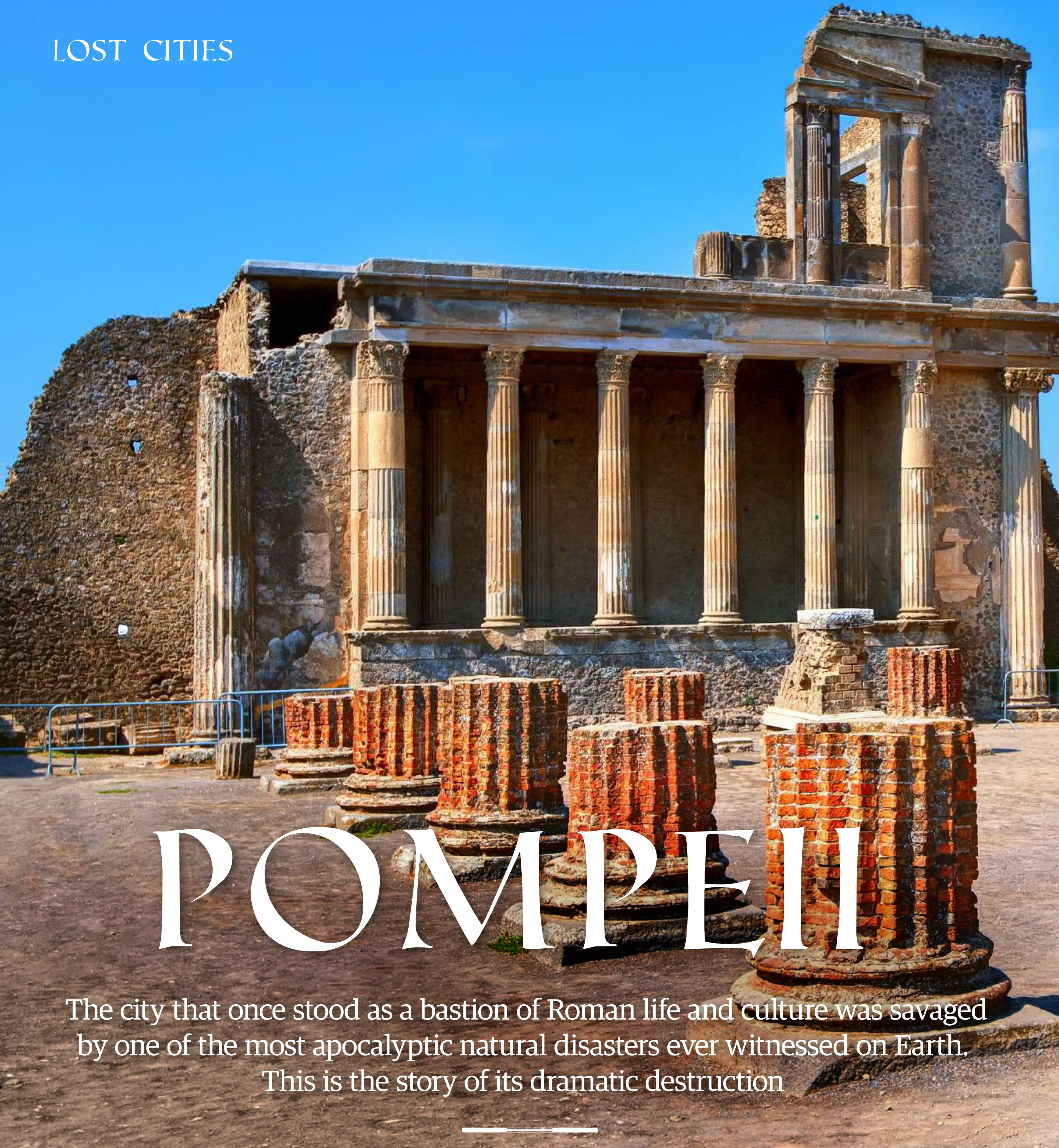


Gelo and the Carthaginians

The Sicilian Wars, fought between the Carthaginians and Greek cities in Sicily, lasted between 600-265 BCE. In this painting, Gelo, ruler of Gela and Syracuse, grants peace to a group of Carthaginians. The only records of the wars that remain are Greek, as all Carthaginian ones were scattered when Romans destroyed the city in 146 BCE.

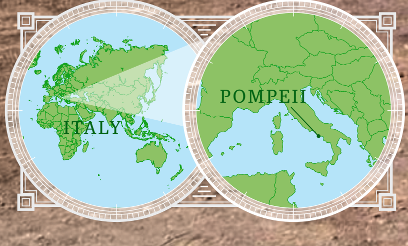


© Getty Images



POMPEII

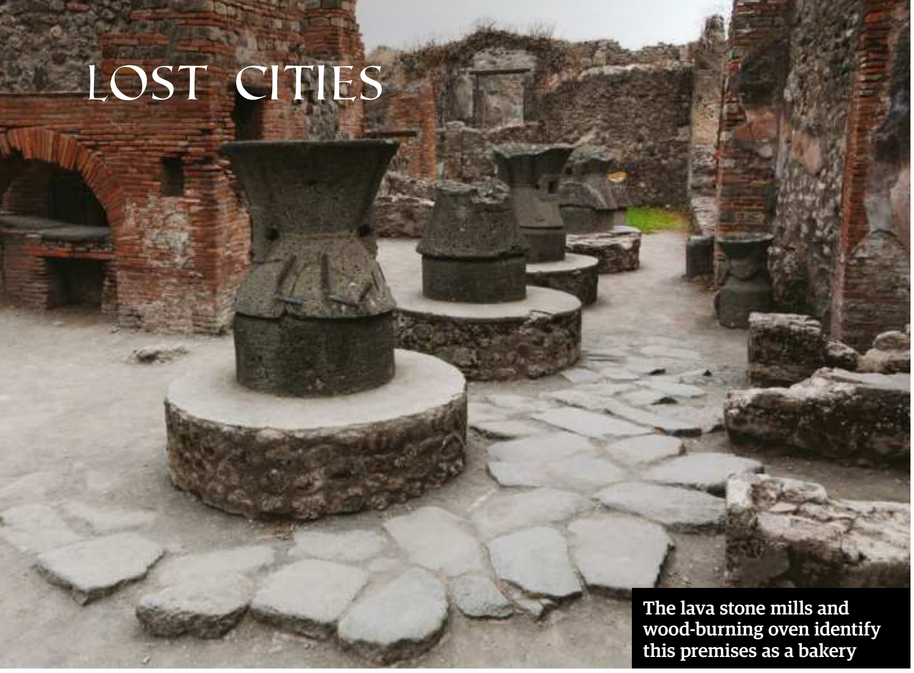
The city that once stood as a bastion of Roman life and culture was savaged by one of the most apocalyptic natural disasters ever witnessed on Earth. This is the story of its dramatic destruction



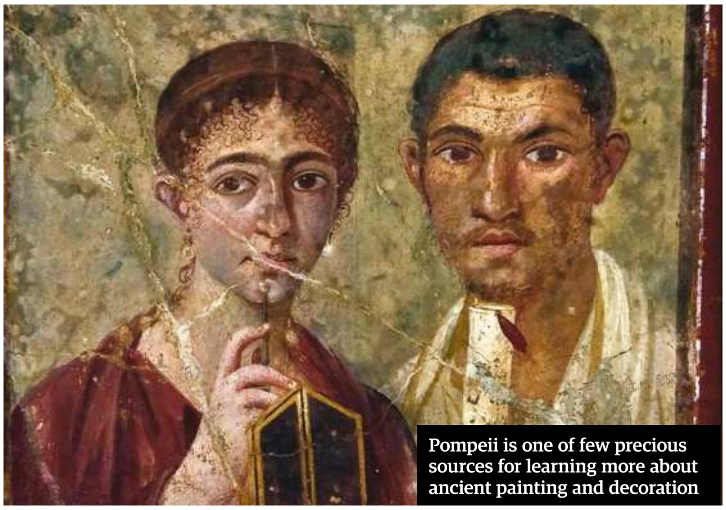
The darkness that surrounded him was blacker and denser than any night. It smothered like a blanket, choking the sights and the sounds from the air. He had fought it for the people's sake, for her sake, but despite his show of courage to Pomponianus and the others, he knew he couldn't bear it much longer. The sea, his only means of escape from that desolate place of dust and death, remained violent and dangerous, and pinned him to the shoreline mercilessly. The fires grew fiercer, the falling rock heavier and his strength began to fail him. When he closed his eyes, he could still see the flames.

Before the eruption of Mount Vesuvius in 79 CE, Pompeii had long been an important and prosperous settlement. Originally founded by the Oscan peoples of central Italy around the 6th century BCE, it quickly became a crucial economic and cultural hub, with its position between Cumae, Nola and Stabiae placing it at the centre of human activities. The settlement also developed a large and bustling port, with the entire Bay of Naples - as well as destinations further afield - serviced through it. Pompeii was economically and culturally at the centre of Roman life, helping at first to formulate pre-Roman culture and then develop the Roman society that can still be seen in the ruins today.

Although Pompeii is best known for how it met its grisly and spectacular end, it was, for centuries, very much a city teeming with culture and life. This picture of Pompeii as a city is still being pieced together. However, thanks to the diligent work of academics and archaeologists from all around the world, today we are developing a snapshot of



The lava stone mills and wood-burning oven identify this premises as a bakery



Pompeii is one of few precious sources for learning more about ancient painting and decoration

what life was like in the city. From a basic point of view, Pompeii boasted almost everything a Roman would expect from a major settlement. Markets, bars, temples, theatres, parks, bath houses, swimming pools, race tracks, vineyards, administrative buildings, blacksmiths, bakeries, eateries, libraries, schools, armourers, villas and more were all present and, in most cases, in large number.

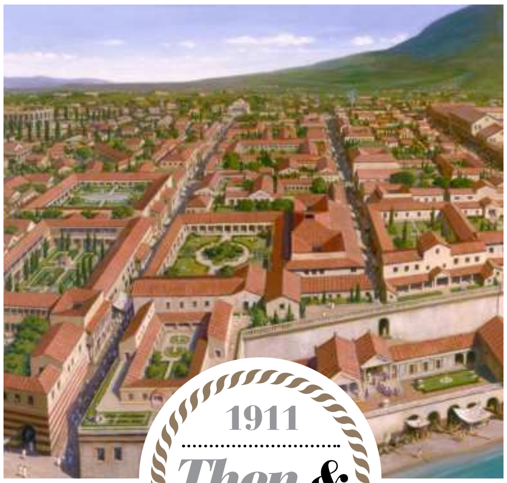
Herculaneum was properly rediscovered in 1738, and Pompeii in 1748, although ancient walls were unearthed as far back as 1599

Indeed, thanks to excavation work carried out in the city, we know that it sported about 200 bars, for example. Equally, three major bath houses have been unearthed and numerous inscriptions have been found in market halls and other buildings indicating what was sold, bought or exchanged within them. From trading companies to laundries, winemakers to hotels, Pompeii was a city of activity and energy that was run from a grand Forum and watched over by the gods of numerous high-profile temples.

The rural areas surrounding the city were also teeming with life and activity. The terrain before the eruption was incredibly fertile, and numerous farmsteads produced vast quantities of agricultural staples such as barley and wheat, as well as olives and more. The city's incredibly prosperous port at the mouth of the Sarno River was also home to many Pompeians. For the time, Pompeii was a rather populous place, with 10-12,000 people living in and around its walls. The city was home to all levels of society – the aristocratic rich, the average men and women that worked as merchants, labourers or craftsmen, the children, who attended schools if they could or worked alongside the adults, and of course there were the slaves, an intrinsic staple of

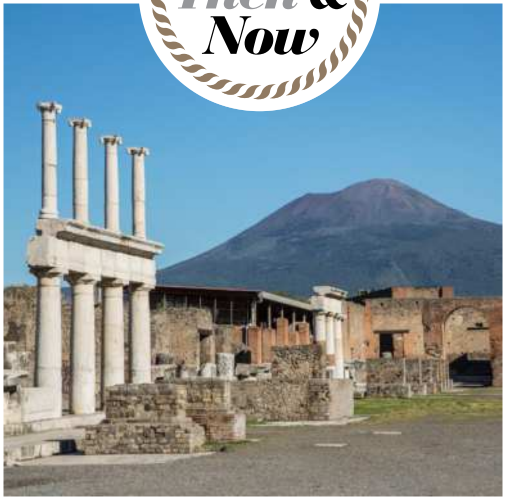
Some exceptionally wealthy members of Roman society lived in Pompeii. Archaeologists have found the remains of some truly spectacular residences within the city walls, which at the time would have also had amazing sea views and unparalleled gardens, courtyards and dining halls. One famous residence, titled the House of the Faun, covers three quarters of an acre, while others still contain wondrous mosaics with hundreds of thousands of pieces of stone, or intricately carved statues depicting men, women and deities alike.

Arguably though, it is the discoveries made about the lives of the poor or average people of Pompeii that have been most illuminating in revealing what life was like in the city. By looking closely at Pompeii's public bath



1911

Then & Now



COUNTDOWN TO ARMAGEDDON

For more than 24 hours Vesuvius brought the apocalypse to Pompeii, engulfing the city in flame, ash and lightning

24 August 79 CE

8am

- Following more than a week of ground tremors, which were overlooked due to their frequency in Campania, a night of extremely violent shocks occurs that culminates at 8am. Many household items and furniture are found overturned.

1pm

- After a morning of eerie calm, Mount Vesuvius erupts with incredible force, throwing out a cloud of volcanic material that spreads out around the mountain and rises 14 kilometres into the sky. It begins depositing ash over the city.

3pm

- The volcano continues to throw out volcanic material. As it cools in the Earth's atmosphere, it solidifies and turns into lapilli, hardened lava, which rains down over Pompeii. Most flee the city; some, including the old and pregnant, remain.

4pm

- Due to the size and intensity of the volcanic hail, Sarno River and the nearby port begin to clog up with debris. Ships get trapped and others at sea cannot make port. Shockwaves shake the city, causing some structures to collapse.

6pm

- Chunks of pumice (a form of volcanic rock) fall from the volcanic cloud that has now blocked out the Sun. Pompeii's streets are buried under the pumice, lapilli and ash, and buildings are crushed and demolished under the weight.

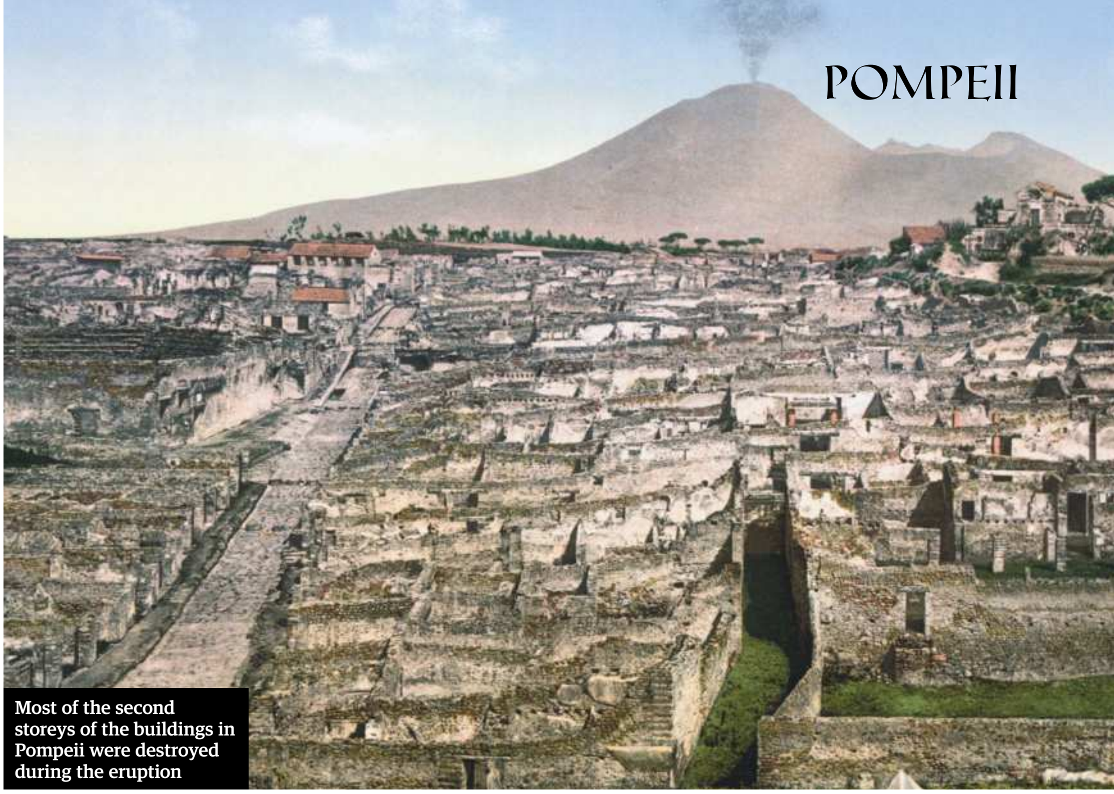
houses, archaeologists have garnered a greater understanding of how they were lit – by hundreds of pottery lamps – and by studying a number of the small shops that lined the city's high street, the Via dell'abbondanza, they have also demonstrated how they used to be protected at night against intrusion with shutters. It is easy to imagine the owner drawing down the shutters as he locked up for the evening.

The vibrant, everyday lives of Pompeians have also been glimpsed in some of the objects recovered from the city. The now famous 'CAVE CANEM' sign in one of the larger surviving residences translates as 'Beware of the dog', while a series of pictures found in a bar show the kinds of dice games its patrons used to play. Ornate mirrors and combs show the importance some of the wealthier residents of Pompeii placed on their appearance, while records of people, clothing and culture help show that Pompeii was far more multicultural than a typical Roman city, with its pre-Roman Oscan roots remaining even 150 years after it became officially Roman.

It is this challenge of discovering the Pompeii that was alive, a city that once stood in the light of the Sun, that currently drives archaeological and academic study in the field. Thanks to the detailed records of Pliny the Younger, the famous Roman lawyer and author, we have a detailed account of Pompeii's fall and the story of how his uncle, Pliny the Elder, strode forth into the disaster zone in an attempt to help the region's fleeing citizens to escape. It is with these records that here we are able to imagine what his final hours may have entailed.

Pliny the Elder, a respected military commander of the Roman Empire and formidable natural scientist, was overseeing the region's naval fleet at Misenum across the bay from Pompeii when the letter came. In it, Rectina, a friend of Plinys, informed him that the mountain's eruptions had rendered all escape from the plains impossible, and pleaded with him as prefect of the naval fleet to come at once to save them.

Pliny, always a man of action and social duty, ordered the fleet's warships to be prepared and launched at once. He had his own doubts about the severity of the situation that Rectina had painted in her letter, but agreed that action must be taken regardless. In contrast, his men were



Most of the second storeys of the buildings in Pompeii were destroyed during the eruption

Plaster casts of the victims were made by archaeologist Giuseppe Fiorelli in the 1800s

25 August 79 CE

1am

- People continue to flee, their movements only occasionally lit up by flashes of lightning. Scalding mudflows stream down the volcano, obliterating the nearby Herculaneum. Ash, lapilli and pumice continue to fall on Pompeii.

4am

- The volcanic column that has risen above Vesuvius collapses spectacularly, sending pyroclastic flows (superheated ash and gases) down its slopes. The first of these flows slams into Herculaneum and eradicates all remaining life.

5am

- A second, larger and hotter pyroclastic flow buries Herculaneum. In Pompeii, the rain of pumice and ash falters, however, due to the thickness of the ash and gas, it becomes hard to breathe within the city and the surrounding area.

6.30am

- More pyroclastic surges reach Pompeii and demolish the city's northern wall. They sweep over the city in waves of toxic gas and smouldering ash. Everyone still in Pompeii is killed horribly, burned and choked to death.

8am

- A final super destructive surge hits Pompeii, demolishing the top floors of almost every building. This surge is so powerful that it reaches Stabiae and even parts of Naples. Fortunately, it loses momentum before it reaches Misenum.

9am

- A fire and lightning storm follows, and, after one final eruption, Vesuvius's summit is blasted apart, shearing 200 metres off its top. The cloud begins to clear, but the landscape is changed completely and blanketed in snow-like ash.

not at all convinced that any movement towards the mountain should be taken. Some said it was a suicide mission, while others feared the wrath of the gods, whose will they believed was being demonstrated through the mountain's eruptions and was something no man was capable of facing up to. Pliny soon dismissed these concerns and, reminding the men that they had a social duty to the people of the region to uphold, ordered that they should make posthaste on a mission of aid.

The fleet launched swiftly and made its course for the bay. As Pliny looked out from the bow of the capital ship, all he could see of the region was that it was cast in permanent shadow under the great cloud of the mountain. The only other detail of note was that the other boats at sea were all heading in the opposite direction. The waters of the bay were choppy but far from unnavigable, and as Pliny surveyed the coastline that was pocketed with poorer settlements and wealthy estates alike, he calculated that they would make land without issue at Stabiae shortly.

Pliny and his fleet soon made port and, amid the falling ash and rock, embraced his friend Pomponianus, who had come to meet him. Interestingly to Pliny, Pomponianus appeared genuinely terrified. He told him of a series of quakes, eruptions and falling debris showers that had plagued the city's residents over the preceding hours, and that numerous other houses had already been damaged. According to the man, the mountain had already destroyed much, and he told Pliny of his fear that his family would be the next to suffer; that their house would fall down and crush them all.

Decamping into Stabiae and, for Pliny, into Pomponianus's residence, the rescue operation began. Pliny and his men quickly went about helping the people whose houses had collapsed, who had been trapped by falling masonry or had become separated from their families. They aided people whose carts had become stuck in the ash and rock, helped others to get their bearings amid the chaos and more than once prevented acts of looting, which had begun to take place in some of the shops on the high streets. This was to be Pliny's course of action moving forward. He was going to stabilise Stabiae and then proceed to other towns and cities, such as Pompeii and Herculaneum, aiding those who needed it and maintaining law and order despite the trying conditions.

Pliny awoke the next day in the early hours to much commotion. Against his instruction, the entire house had remained awake all night, with only Pliny getting any sleep. He soon realised that in one way this had been a good thing, as unknown to him, the frequency of the falling rock had increased dramatically and the courtyard from which his room was accessed had almost been entirely filled with rock and debris. In fact, if one of the family had not come and woken Pliny, then he may not have been able to escape the confines of his room. As Pliny moved through the courtyard to bid good morning to the others, the entire house was suddenly subject to a colossal quake, with the walls

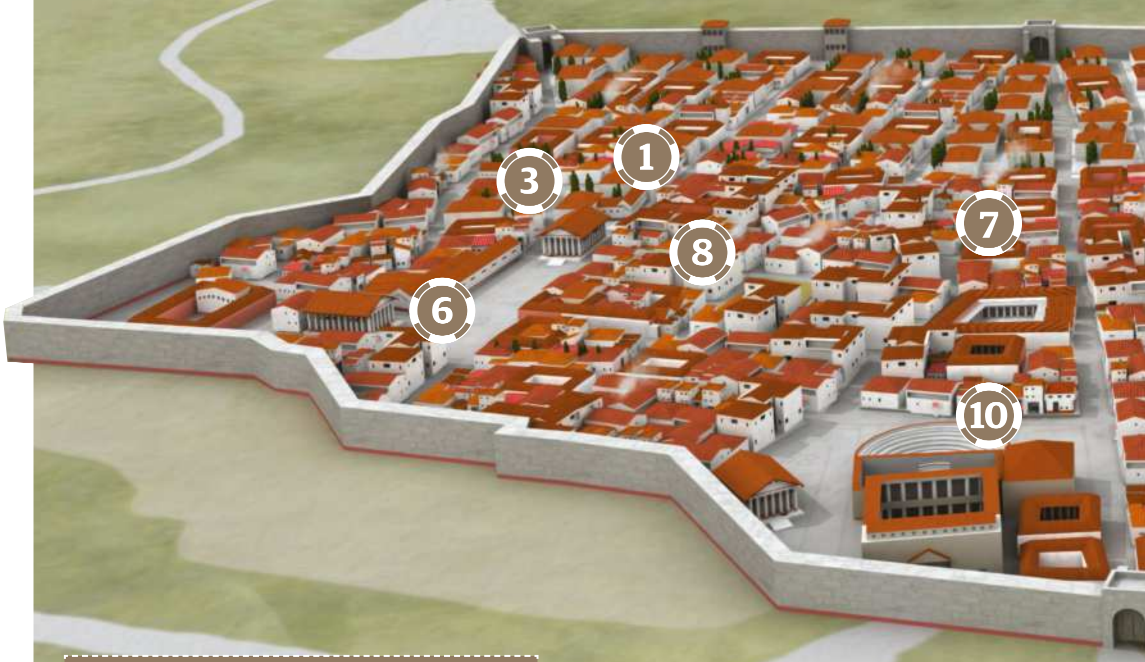
INSIDE POMPEII

Discover the key sites of this famous city, both for the Roman people that once inhabited it and the archaeologists today exploring its remains

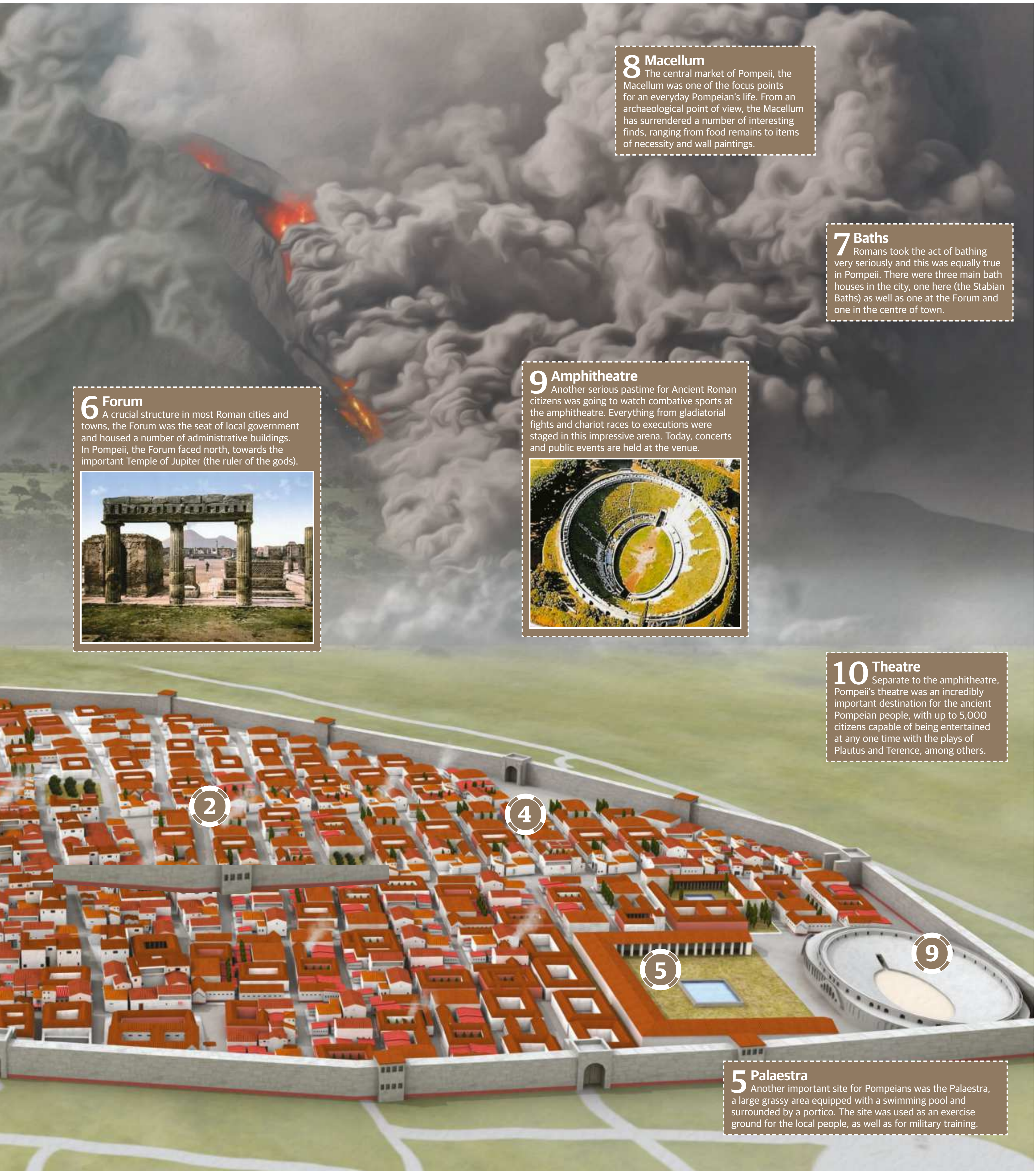
1 Residences
For archaeologists today, building up a picture of how Pompeians lived prior to the disaster is incredibly important. As such, excavating various houses ranging from basic huts to palatial mansions is paramount. The 'House of the Tragic Poet', located here, is believed to be a typical example of a Pompeian residence.

2 High street
Pompeii was intersected in an east to west orientation by the Via dell'abbondanza, a large high street off which a number of merchants, bars, baths, administrative buildings, temples and more were located and connected.

3 Temples
The gods were a crucial aspect of Roman society, and in Pompeii a number of high-profile temples were built in their honour. The Temple of Venus and Temple of Jupiter were arguably the most important, and remain so today in terms of archaeological study.



4 Bars
Unsurprisingly, bars were an incredibly important part of Pompeian life. Archaeologists have discovered the remains of more than 200 bars in Pompeii, with many lining a vast vineyard boarding the Via dell'abbondanza high street.



5 Palaestra
Another important site for Pompeians was the Palaestra, a large grassy area equipped with a swimming pool and surrounded by a portico. The site was used as an exercise ground for the local people, as well as for military training.

6 Forum
A crucial structure in most Roman cities and towns, the Forum was the seat of local government and housed a number of administrative buildings. In Pompeii, the Forum faced north, towards the important Temple of Jupiter (the ruler of the gods).

7 Baths
Romans took the act of bathing very seriously and this was equally true in Pompeii. There were three main bath houses in the city, one here (the Stabian Baths) as well as one at the Forum and one in the centre of town.

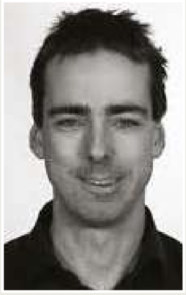
8 Macellum
The central market of Pompeii, the Macellum was one of the focus points for an everyday Pompeian's life. From an archaeological point of view, the Macellum has surrendered a number of interesting finds, ranging from food remains to items of necessity and wall paintings.

9 Amphitheatre
Another serious pastime for Ancient Roman citizens was going to watch combative sports at the amphitheatre. Everything from gladiatorial fights and chariot races to executions were staged in this impressive arena. Today, concerts and public events are held at the venue.

10 Theatre
Separate to the amphitheatre, Pompeii's theatre was an incredibly important destination for the ancient Pompeian people, with up to 5,000 citizens capable of being entertained at any one time with the plays of Plautus and Terence, among others.

Discovering Pompeii

Do we know everything there is to know about Pompeii?



Expert bio: Ray Laurence is a professor of Roman history and archaeology at the University of Kent. After studying in Rome during his PhD, his research has spanned a number of major topics, including Pompeii.

What can we deduce from studying the remains at Pompeii, and what problems do they pose?

The problem with archaeology is that it doesn't say "we did this", and that's the key problem. For instance, if you are looking at a house you have paintings, you have rooms, you have some indications of furniture and finds, but you don't know where those objects are used or how they are used. You might have skeletons or bodies but a lot of people left when the eruptions started. One of the indications that so many people left is that we have a disproportionate amount of pregnant women, for example. Because obviously if you're pregnant, and Vesuvius is erupting, you may not feel that mobile to the extent that you feel you can leave.

We also have quite clear evidence from Pompeii that, when people left, they took their things with them. For example, there are houses without any cooking pots, because the thing you definitely take when you leave a disaster zone is food and the things needed to cook it. There's also the fact that the pyroclastic surges did just demolish the upper story of most of the houses. So one of our key problems is that when you go to Pompeii it looks like everything is ground floor, whereas in actual fact there's a whole upper storey to every building which we simply don't have. What you think happens upstairs is really open, actually. It's one of those things where we're not sure what goes on - when you walk up the stairs in Pompeii is it just bedrooms, or is it dining rooms that you can get a view from?

Do you think there is still more to learn?

I think the whole place has heated up in the past 20 years. It has been a massive transformation. There's more interest in the pre- 79 CE Pompeii, such as the development of the city, and there's been lots of excavation to look at that.

Also, there is work being done on children. The thing I wanted to do, and it's something that I am presenting at the moment, is to look at Pompeii and evaluate how high anything is. We can then start looking at bar counters, for example, and seeing how tall they are. Our society creates quite high bar counters, to prevent children from accessing things like alcohol or sweets, however what we found in Pompeii is that, by our standards, all the bar counters are too low. This has implications, it means that children used the bars. We're discovering a whole potential world of how children were using the city, which is not greatly different to how adults were using the city.

If we're going to think through Pompeii and have a vision of Pompeii then you want a street scene with loads and loads of children in it. Some of them at school, some of them working, some of them not doing anything and some of them running around. That is what I find quite exciting and that is what I think will be a thing of the future – we'll write a real history of the children of Pompeii.

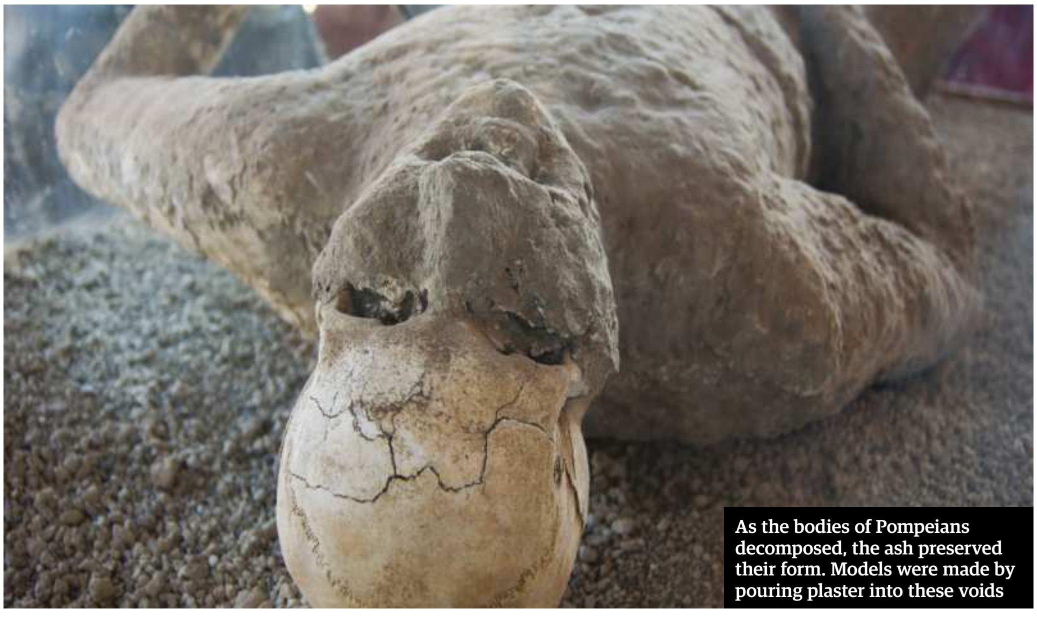
violently shaking and bits of ceiling crumbling to the ground.

Pliny had already surmised that any further progress on land was then going to be impossible due to the escalating severity of the conditions. He immediately began to plot a new plan in which they would leave as soon as they could via boat, make port further down the bay and redouble their rescue efforts inland. Comparing the risks involved, either being hit by the rock raining down outside or by the falling masonry inside, the assembled group of people decided that they would remain indoors, and there was nothing that would convince them to venture forth with Pliny. One person even suggested that they put pillows on their heads, affixed with strips of cloth, to prevent injury.

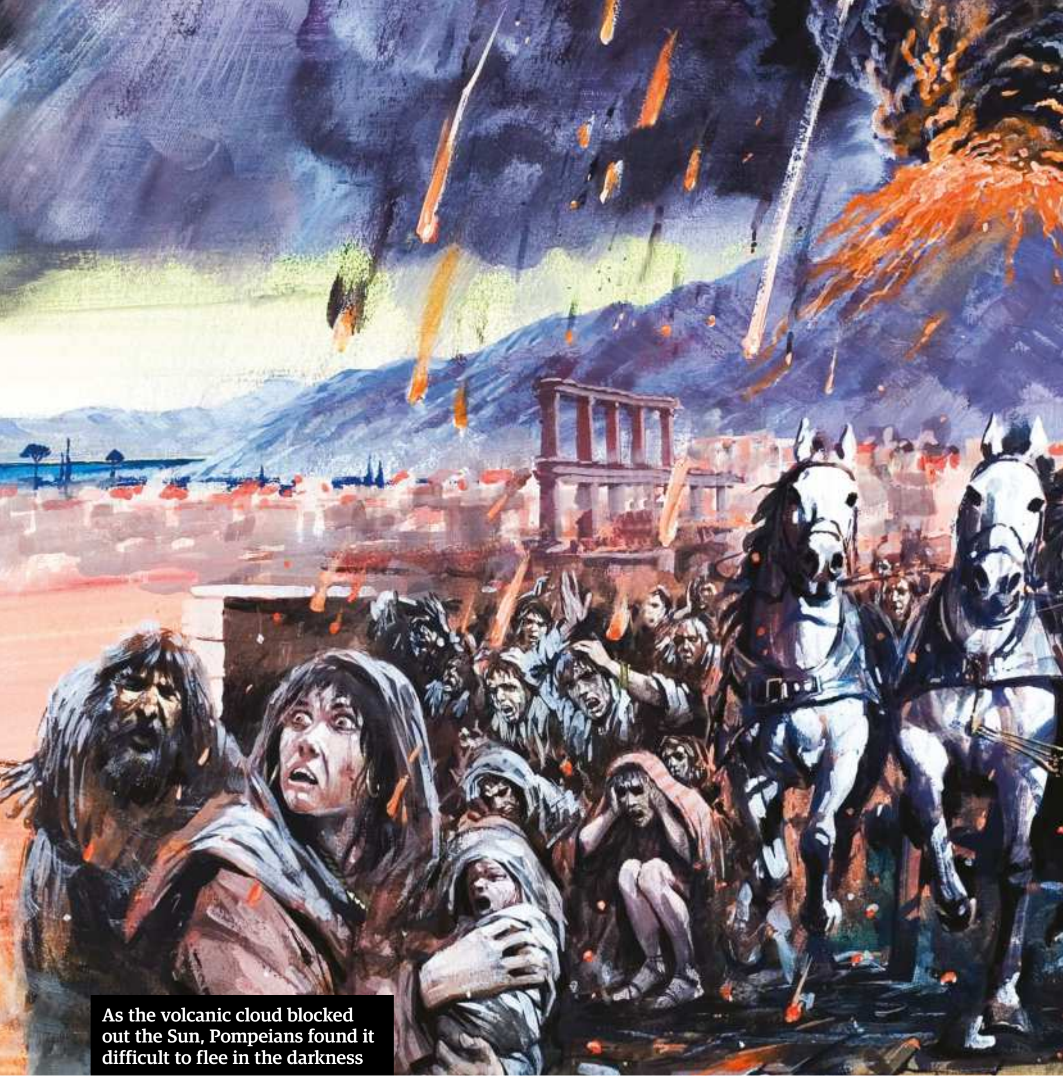
As Pomponianus and company refused to leave the residence, Pliny realised that it would be up to him and his men to get them all to safety. They would have to move quickly, too, as Pliny could see that far from subsiding, the mountain's fury was not yet at its climax. Gathering the best and bravest of his men, Pliny made for the shore. As they moved, dodging the falling rock and with burning lamps and torches lighting the way left, right and centre (as even after morning arrived the gloom had remained intense due to the mountain's Sun-blocking cloud), Pliny decided that if the conditions were in any way favourable for a launch, then he would gather all he could and leave immediately.

The heat and humidity continued to grow in intensity. The cloud of the mountain seemed, according to Pliny's understanding, to have trapped all of its expelled heat and gas and, combined with the perpetual night and glow of the fires, produced a sweltering and claustrophobic atmosphere. It was at this point that Pliny felt his throat becoming inflamed - an old ailment that had been with him

The ruins of Pompeii were well preserved by the blanket of ash



As the bodies of Pompeians decomposed, the ash preserved their form. Models were made by pouring plaster into these voids



As the volcanic cloud blocked out the Sun, Pompeians found it difficult to flee in the darkness

> "Herculaneum, Pompeii and Stabiae were levelled by the eruption of Vesuvius, their populations eradicated"

since youth - and he soon found that he was becoming out of breath far quicker than normal.

Upon finally arriving at the shore, Pliny's spirits sunk, as while the wind was not as severe as it once had been, it still blew against a departure and the ocean waves were incredibly fierce. He suddenly felt dizzy and, calling to a few of the men who had made it with him, asked for a blanket to be laid out for him so that he could catch his breath. He also asked, repeatedly, for cold water to be brought for him, which he consumed while sitting on the shoreline and staring out to sea.

Then, without warning, the glows coming from inland exploded in intensity and the smell of sulphur hit Pliny like a great wave. Looking left and right, he saw the remaining men beginning to flee in every direction, stumbling and tripping in their haste to run. Rising slowly from the blanket, Pliny turned and, like the breaking of the Sun's rays at dawn across the sea, was illuminated by the onrushing firestorm.

Pliny the Elder was found two days later, when daylight finally returned to the region, dead on the shore. His body was found intact and uninjured, still fully clothed and looking as though he had slipped into a peaceful sleep rather than suffered a violent death. It is believed that he died from suffocation, both due to the density of gases expelled in that fateful firestorm and in part to his constitutionally weak windpipe.

Rectina, who wrote to Pliny, was never rescued, and sadly there are no existing records of whether she survived the disaster or not.

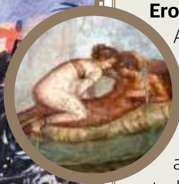
The town-cities of Herculaneum, Pompeii and Stabiae were levelled by the eruption of Vesuvius, their populations largely eradicated and their once proud majesty destroyed. However, people soon returned to the region after the disaster and began repairing what they could and rebuilding. Due to the apocalyptic scale of the disaster, though, the three sites were academically lost for more than 1,500 years, with the first new mention of them in historical records emerging in 1599.

Today, the entire region is a major tourist attraction, with millions of visitors from around the world seeing this part of Campania every year. It is Pompeii, however, the once thriving centre of human culture, that draws the most attention. Its story is one of humanity, both in good times and bad, both in sun and in shadow.

Pompeii's greatest finds

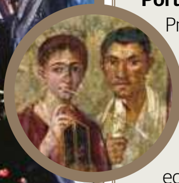
Archaeologists have recovered a number of spectacular and revealing objects that speak volumes about what life was once like in Roman Pompeii

Erotic art



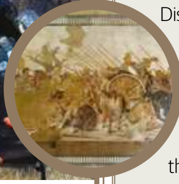
A number of pieces of erotic art have been found throughout the remains of Pompeii, demonstrating numerous couples getting intimate. They provide extra detail as to what life was like for the Pompeian people, as well as valuable detail on painting techniques and materials.

Portrait of Paquius Proculo



Probably the most important fresco to be discovered in Pompeii, this portrait shows a middle-class Pompeian man and his wife. He wears a toga and holds a rotulus, showing he was involved in public affairs, while she holds a stylus and wax tablet, showing she was educated and literate.

Alexander Mosaic

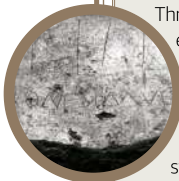


Discovered in the House of the Faun in Pompeii, this mosaic depicts the battle between the armies of Alexander the Great and Darius III of Persia. It is an important find as it is one of the most famous depictions of Alexander that survives and also an excellent example of the Roman mosaic craft. It is also a reminder of Pompeii's pre-Roman origin.

Funerary statue

This funerary statue is impressive in both scale and artistry, being commissioned by a wealthy Pompeian family to adorn a family tomb. It's purpose was to remind both the living and dead of the deceased's worthy deeds and virtues. It also lets archaeologists know this family were important and well off.

Inscriptions

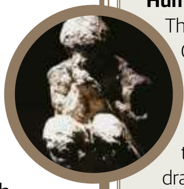


Throughout Pompeii there are a number of enlightening inscriptions carved into the stone. These help archaeologists piece together further the jigsaw of what life was like for the men, women and children of ancient Pompeii. One inscription in the city's basilica states: "Lucilla ex corpore lucrum faciebat," which translates as 'Lucilla made money from her body'.

House of Vettii

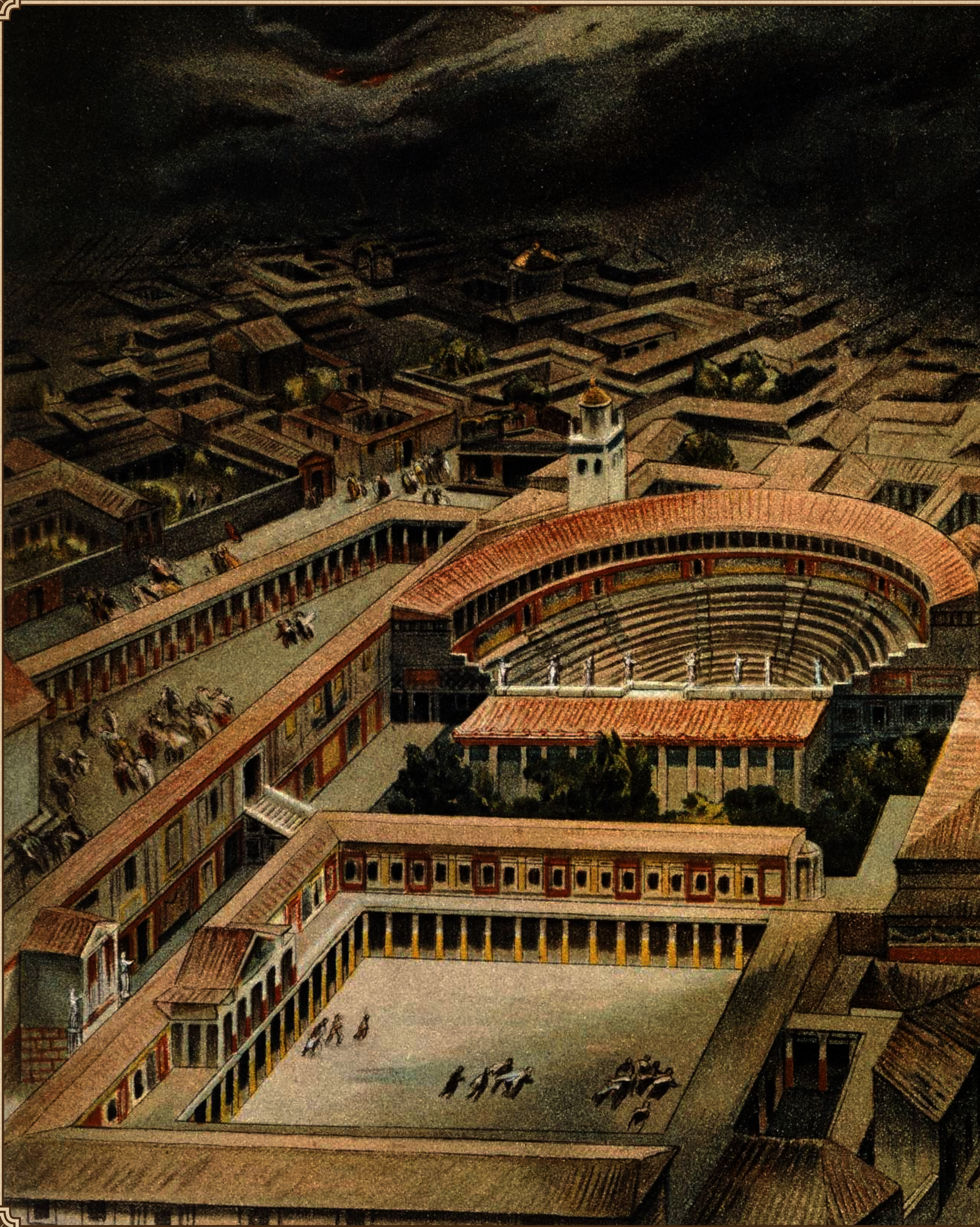
The most famous and luxurious residence to be excavated in all of Pompeii, the House of Vettii was owned by two freedmen and, thanks to careful excavation, retains much of its structure, objects and frescos today. The site is really important in depicting how wealthy Pompeians lived, and the structure and layout of their residences.

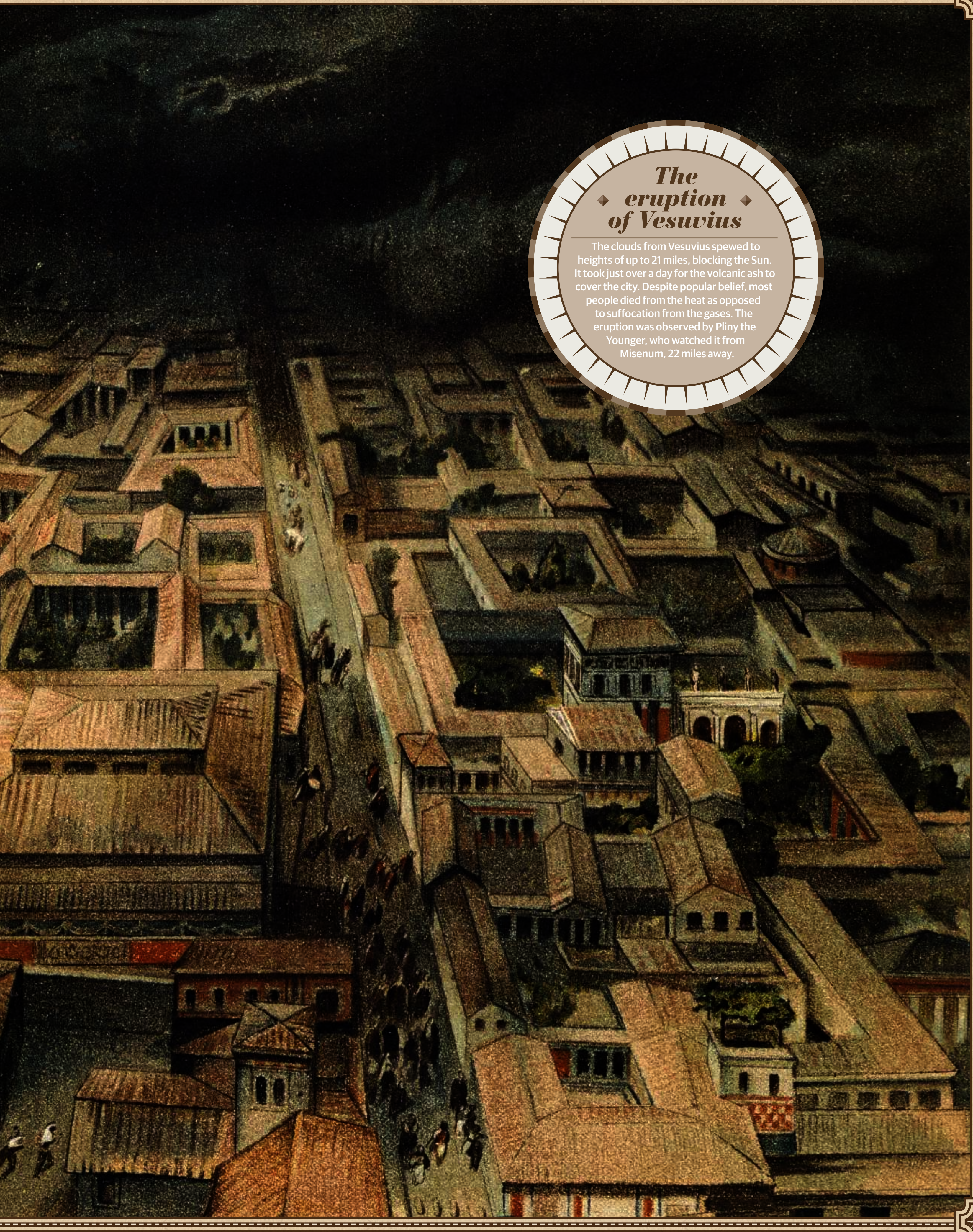
Human remains



Thanks to Victorian-era Italian archaeologist Giuseppe Fiorelli's plaster casts of Pompeii's victims, we have a clear and horrific picture of how many Pompeians lost their lives when Vesuvius erupted. These tormented death throes have become an image of Pompeii and draw archaeologists from around the world.

© Adrian Mann, The Art Agency, Getty Images, Look & Learn, Thinkstock





The eruption of Vesuvius

The clouds from Vesuvius spewed to heights of up to 21 miles, blocking the Sun. It took just over a day for the volcanic ash to cover the city. Despite popular belief, most people died from the heat as opposed to suffocation from the gases. The eruption was observed by Pliny the Younger, who watched it from Misenum, 22 miles away.

© Getty Images

PERSEPOLIS

Once the capital of the Achaemenid Empire, the ruins of this magnificent city lie at the foot of the Mountain of Mercy in Iran

IRAN
PERSEPOLIS

“I Darius, great king, king of kings, king of lands… I built this fortress… And I built it secure and beautiful and adequate.” So reads part of a text inscribed on a wall at Persepolis, one of the finest archaeological sites in the world. Situated in what is now south-west Iran, just 60km from Shiraz, Persepolis was far more than a fortress; it was the seat of government of the Achaemenid (Persian) Empire and an architectural jewel. Its remote mountain location meant that it was mostly used during the spring and summer months. A mighty complex that was designed to impress, it comprised palaces, a columned hall, grand stairways, statues and towers - all built on a vast terrace partly hewn from a mountain. Although Darius I (522-486 BCE) began its construction, work continued under the reign of his son, Xerxes I (486-465 BCE), and his grandson, Artaxerxes III (465-424 BCE). It took around 100 years to complete, and reflected their dynastic power. However, all this magnificence was destroyed in 330 BCE by Alexander the Great’s invading forces, who sacked, burned and looted it. The ancient historian Plutarch claimed the Macedonian conqueror carried away treasure on the backs of around 20,000 mules and 3,000 camels.

At its peak, the Achaemenid Empire controlled territories that stretched from Asia and Afghanistan in the east to Macedonia, Libya and Egypt in the west - it ruled 44 per cent of the world’s population. The kings gained a reputation for creating imposing cities and, as is evidenced at Persepolis, reinforced their aura by the judicious use of monumental art and architecture. Even the location of this complex, perched high above a plain, indicated

Unearthing Persepolis

An expert scholar of the Islamic world answers some questions on Persepolis

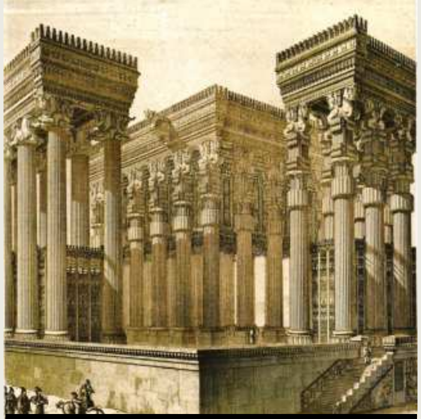
Expert bio: Professor of Arabic at the School of Oriental and African Studies in London, Professor Hugh N Kennedy gained his PhD at Cambridge and is the author of numerous learned articles and books on the Islamic world. He occasionally acts as an expert guide in Iran, leading specialist tour groups round sites such as Persepolis.

Have there been any significant finds at Persepolis in the 21st century?
No, largely because the site was excavated extremely thoroughly in the 20th century, and a great many important discoveries were made. There are still some areas that have not been examined, however they are small and unlikely to yield much.

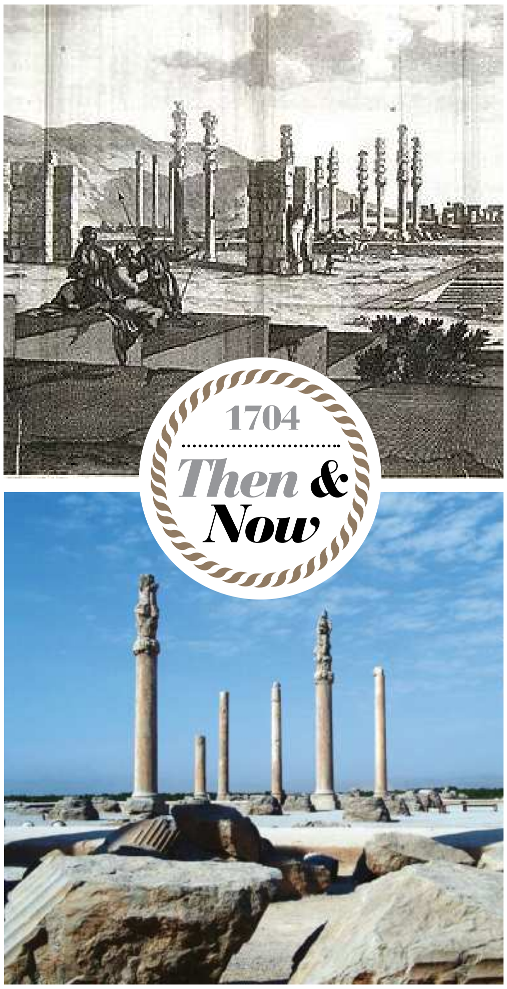
What happened to the treasures Alexander the Great plundered from the city? Can any be seen in museums today?
We think that precious items made from gold and silver would have been melted down to make coins, so that Alexander could continue to fund his military campaigns. His forces left a few objects behind in Persepolis and a number of these can be seen in the museum in Tehran.

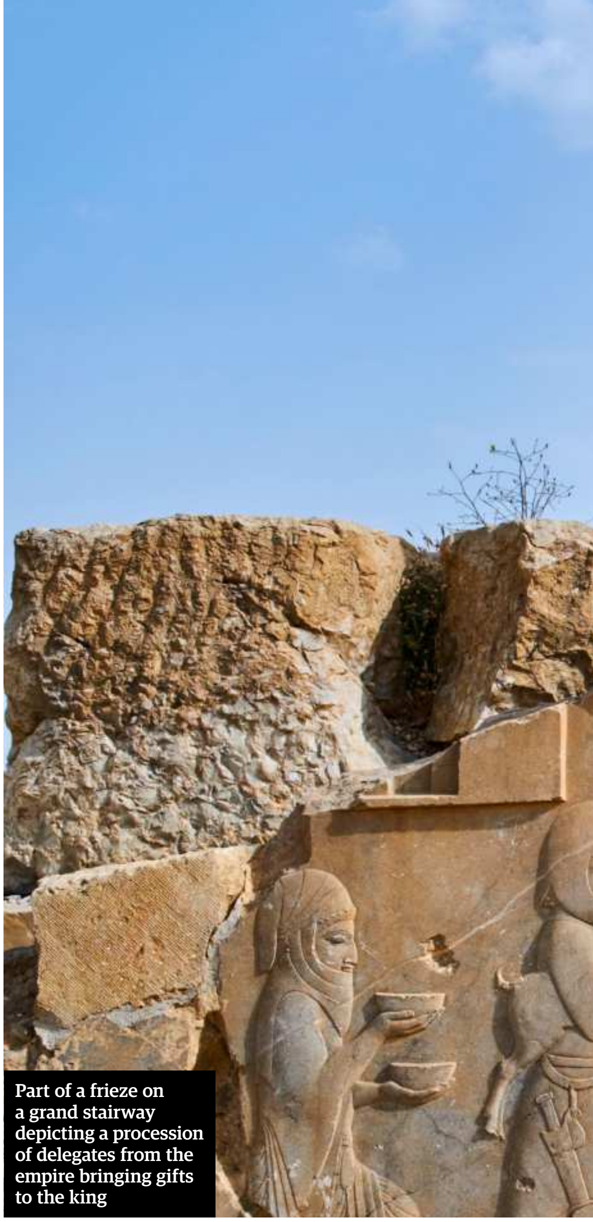
What is considered the most architecturally important structure at Persepolis?
Ah, that's easily the great Apadana, which is the largest and best preserved of all such surviving structures.

Is it easy for travellers to visit Persepolis today?
Yes, you will need a visa to enter Iran, but once you're there you should not encounter any problems. The site is close to a main road and the whole ceremonial centre is open to tourists.



This is a visual reconstruction of the Apadana created by Charles Chipiez, a French architect and Iranologist of the 19th century





Part of a frieze on a grand stairway depicting a procession of delegates from the empire bringing gifts to the king

that these were rulers at the peak of their powers. The complex comprised a central citadel which occupied 12 hectares of a much larger city, which stretched 50 hectares in all. There were palatial quarters, residences, a treasury and fortifications. Its main function, though, appears to have been less a stronghold and administrative base, and more a ceremonial centre. It was a place that proclaimed power and authority.

Before any buildings could go up, workers had to cut deep into the slopes of Kuh-e-Rahmat, the 'Mount of Mercy', then construct an outer wall and fill it in with the rock debris. This allowed them to create a terraced platform on which the city could sit. The next step was to carve out a sewage system deep into the rocks and build a large, elevated cistern at the foot of the mountain – a tank that held water for drinking and bathing. Around 515 BCE, a double-flight of access stairs was added, stretching around 18m (59ft) from the surrounding plain to the terrace above. It was wide, with broad treads on the stairs, which has led some to speculate that it was intended to allow dignitaries to ascend on their horses.

Grey limestone was the main building material, and initial work was concentrated on the Council Hall, the Treasury, a palace for Darius and a columned reception hall known as the Apadana. This last was so vast, the largest building on the terrace, that it was not completed until after Darius's death. Reached by monumental stairways, it must have been a stunning sight; open to the elements on three sides, towers built of mud-brick at each corner, its roof supported by 72 elegant columns topped with carved capitals, which represented double-headed bulls, or in some cases double-headed lions, which stretched their necks out under the beams of the ceiling. Although nearly all were destroyed by Alexander's forces, 13 still remain – stretching upwards towards the open skies like outstretched fingers. The columns were able to be slender because the architects had made the roof light by using wooden lintels.

The Apadana was visually splendid. Its corner towers were four storeys high and decorated with glazed bricks bearing motifs, while the stairways were adorned with sculpted friezes. These represented processions of delegates from subject-nations paying their respects to the king, who is depicted receiving them majestically enthroned. They are dressed in their traditional attire and bear gifts such as jewellery, animals, fabrics and items of gold and silver. Details like distinctive head-dresses, beards and clothing give character to individual nationalities, and some think they depicted actual events – perhaps a procession held at Persian New Year, where the king would receive tributes from the nations he controlled. Armenians, for example,

can be identified bringing gifts of wine. The friezes certainly served to underscore his power and authority.

The Treasury was partly an armoury, partly a grand storage area, built to hold the tributes sent from imperial territories, as well as items plundered from conquered nations. At one time Darius also used it to hold receptions – stone reliefs found here show him receiving a guest.

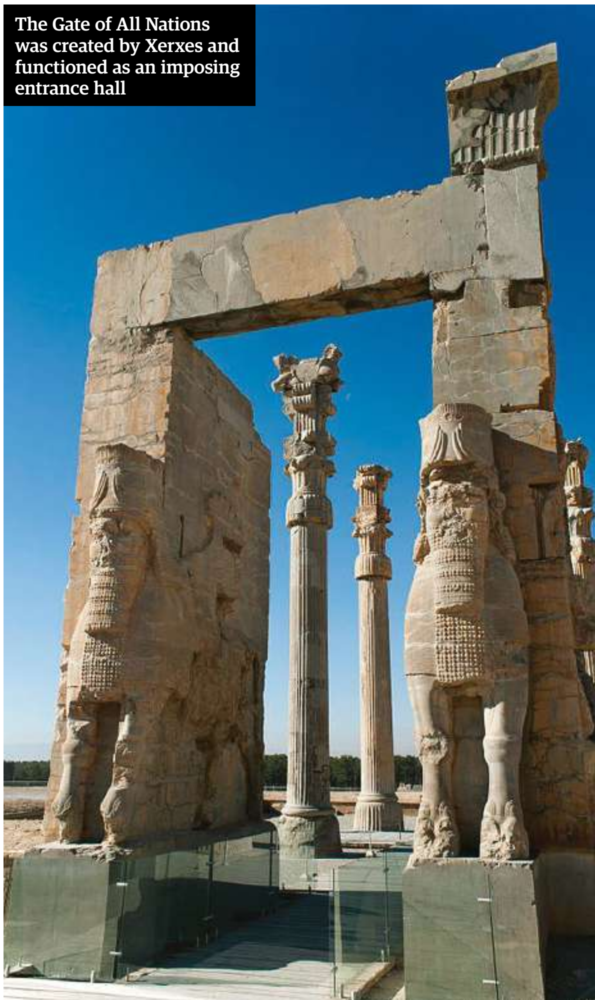
It was during Xerxes' reign that Persepolis really blossomed. He oversaw construction of the Throne Room (work later completed by his son), which was used for receptions and later as an area to display treasures in. Also known as the 100-column hall, it had eight stone doorways decorated with reliefs showing throne scenes and images of Xerxes showing his bravery by fighting off monsters. The northern portico was flanked by two vast stone bulls. There is also a building known as Xerxes' Harem, which has a columned hall and 23 apartments. A relief on one doorway shows Xerxes arriving flanked by attendants, one of whom holds a parasol over his head. That on another doorway shows the king fighting a lion. Scholars disagree as to whether this was really the home of the royal ladies – some think it was used as accommodation for visiting dignitaries.

Xerxes also built the 'Gate of the Nations' or 'Gate of All Lands', a mighty gateway beneath which all visitors had to pass on their way to pay tribute to the king in the Throne Room. It was not a gateway as we imagine, but instead a large hall with four columns holding up the roof, and giant stone bulls guarding the entrances. There were three doorways, above each of which was an inscription in three languages – Old Persian, Elamite and Babylonian – declaring 'Says Xerxes the king, by the favour of Ahuramazda, this Gate of All Lands I built'. Ahuramazda was considered the greatest of all their gods. Archaeologists have found pivoting devices on the corners of the doors, which were made of wood and covered with sheets of ornamental metal.

Inscriptions were much in evidence at Persepolis and used by Darius, and even more by Xerxes, to ensure that their role in the construction of the complex was not in doubt. Texts appear on palaces, walls and gateways, reminding their successors

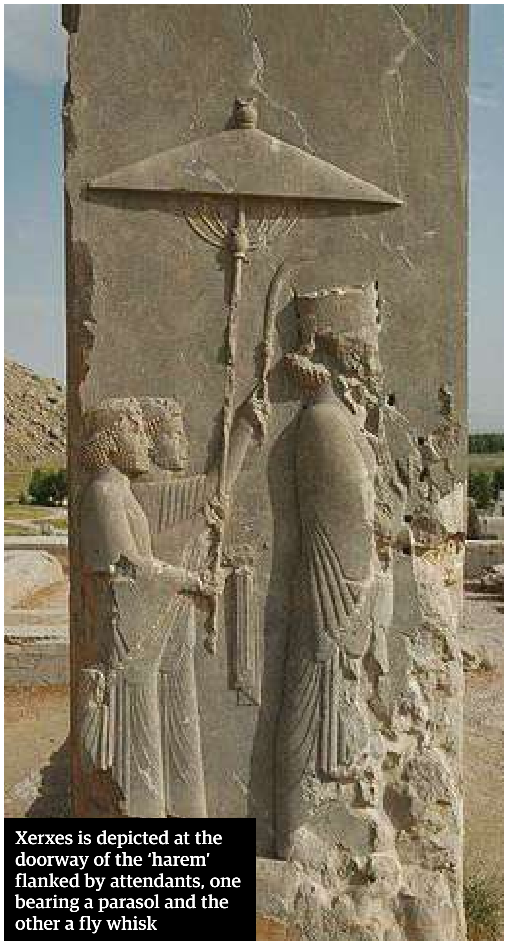
"There were palatial quarters, residences, a treasury and fortifications"

The Gate of All Nations was created by Xerxes and functioned as an imposing entrance hall



that this was effectively a dynastic monument. These were rulers who wanted to ensure that they literally and metaphorically carved their names in stone. However, these royal proclamations are not the only inscriptions to be found at Persepolis – nor are they the most interesting. Archaeologists excavating the Treasury found vast numbers of clay tablets bearing cuneiform text, which have shed light on many aspects of life at the complex. They reveal that workmen came from across the empire – stone workers from Egypt, for example – as well as how much, or in what way, they were paid. Some tablets state the month and year that work took place, while others record land sales, taxes due and money that had been borrowed. A few even detail the amount of intoxicating haoma, a ritual drink, that could be used in a sacred service. Paradoxically, it was the burning of the Treasury that saved the tablets for posterity as they were baked hard in the fire instead of degrading to dust.

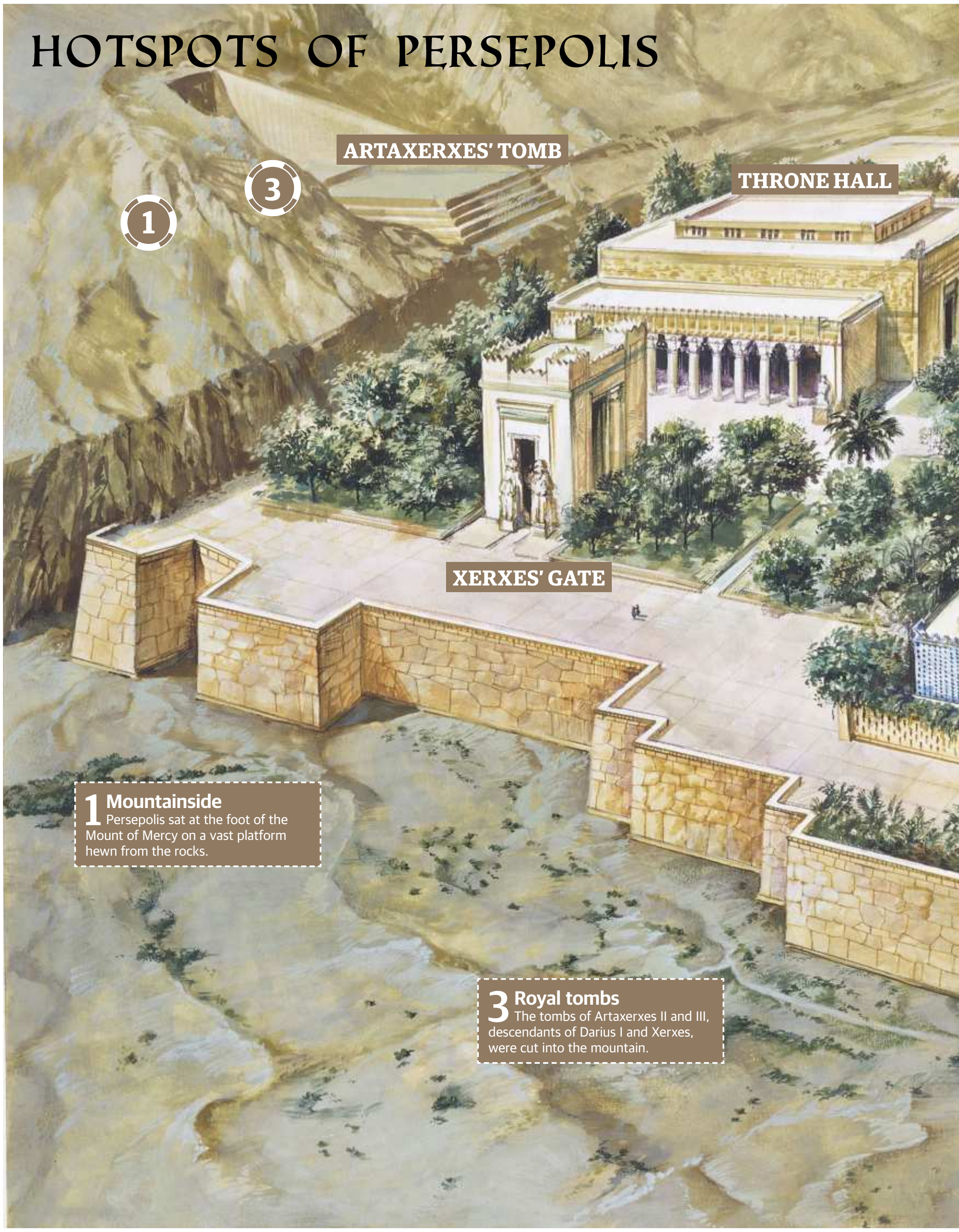
Persepolis in all its glory must have presented a dazzling sight. According to the Greek historian Diodorus, it was the wealthiest city in the world and filled with riches made of gold and silver, fine furniture, fabrics and works of art. Diodorus describes the ruthless way in which Alexander's forces plundered the city, slaughtering any men who stood in their way and even cutting off the hands of those who tried to grab on to their possessions. After the sacking, the city fell into disuse, its remaining columns and statues left to crumble in the sun. The first traveller to correctly identify the ruins as those of Persepolis was Garcia de Silva Figueroa, the king of Spain's ambassador, who came to the ghost city in 1618. He was followed by Italian, Dutch and French travellers, as well as a number of amateur archaeologists, but it was not until 1930 that scientific excavations began. These were conducted by Ernst Herzfeld and Erich Schmidt from the University of Chicago. Their work ended in 1939, with the outbreak of World War II. Excavations gradually resumed after the war had finally ended, and archaeologists are still uncovering the secrets of this lost city and the surrounding urban landscape, while researchers work hard to digitise the text on the clay tablets, to ensure they remain accessible to future generations. Persepolis was declared a UNESCO World Heritage Site in 1979.



Xerxes is depicted at the doorway of the 'harem' flanked by attendants, one bearing a parasol and the other a fly whisk

> "According to Greek historian Diodorus, it was the wealthiest city in the world"

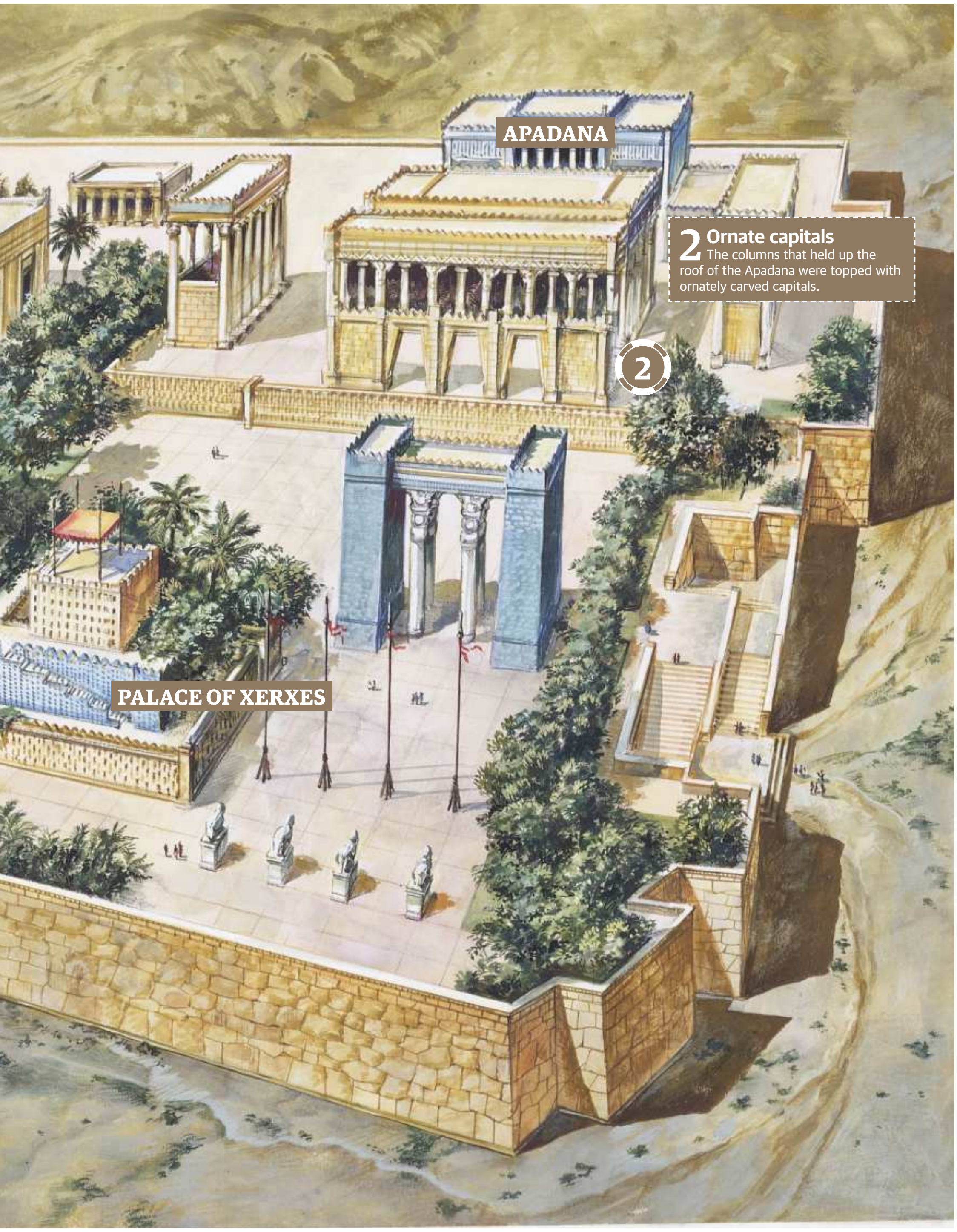
HOTSPOTS OF PERSEPOLIS



1 Mountainside Persepolis sat at the foot of the Mount of Mercy on a vast platform hewn from the rocks.

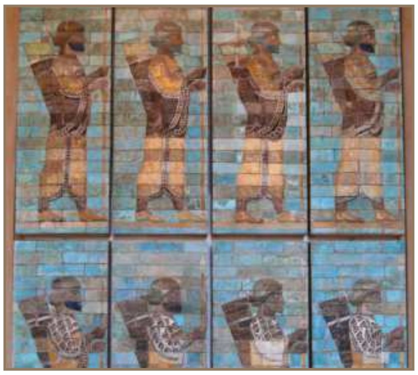
3 Royal tombs The tombs of Artaxerxes II and III, descendants of Darius I and Xerxes, were cut into the mountain.

Persepolis was dotted with striking statues, such as the one of this giant bird, taken here at sunset

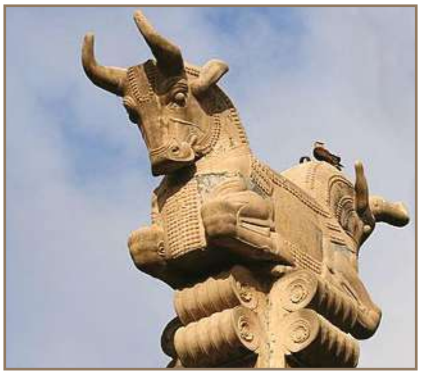


2 Ornate capitals
The columns that held up the roof of the Apadana were topped with ornately carved capitals.

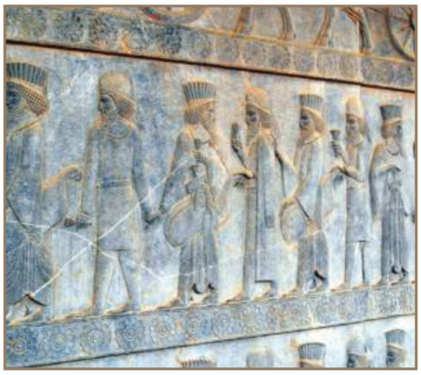
Stunning artworks from Persepolis



Glorious glazing
The Apadana was decorated with beautifully coloured brick friezes such as this one, which depicts the royal guards. They were known as Immortals because those who died were immediately replaced.

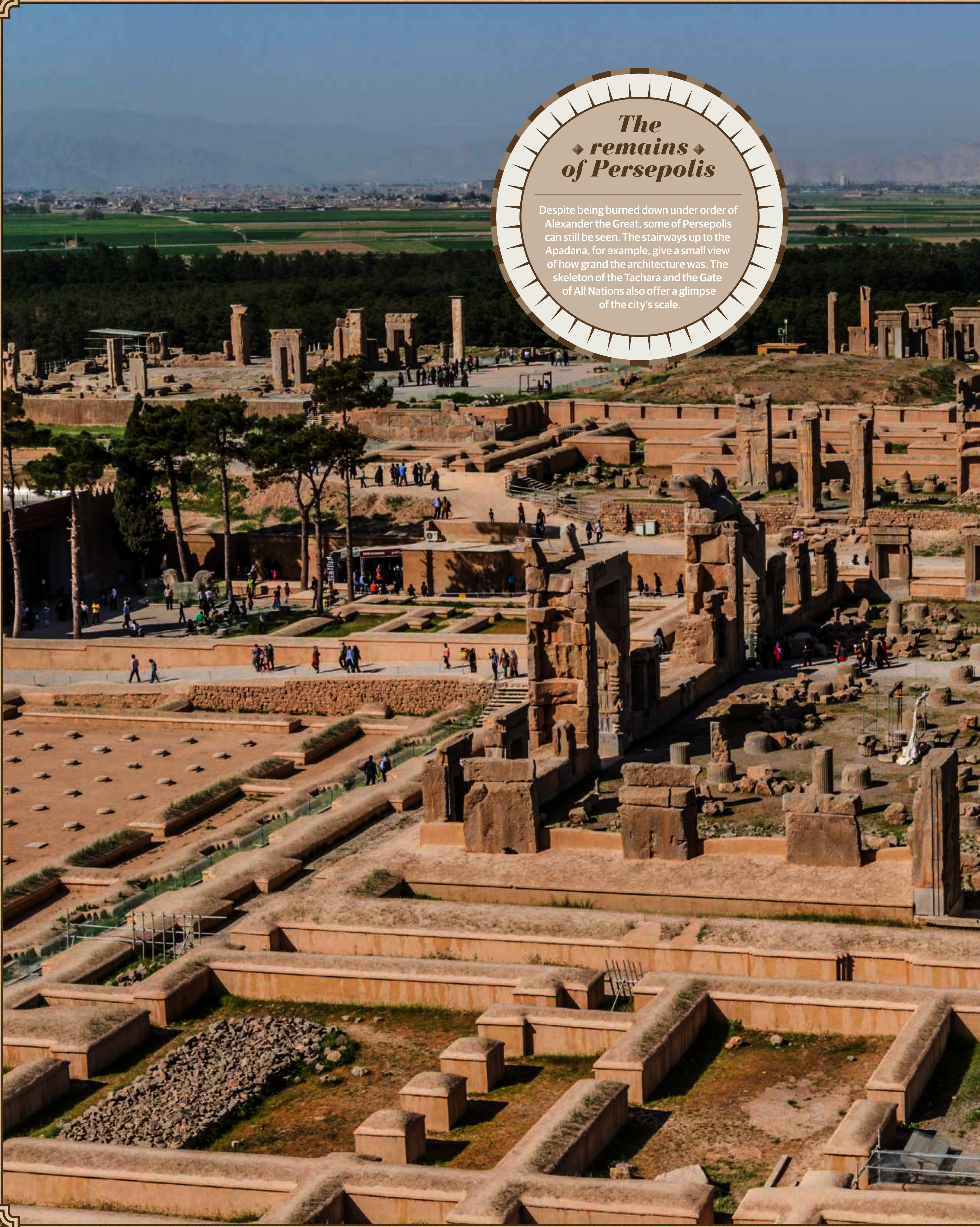


Carved capital
This is one of the remaining capitals that topped the supporting columns of the Apadana. It shows a double-headed, kneeling bull and would have stretched beneath the roof beams.



Stairway procession
The stairway leading to the Apadana was decorated with intricately carved figures, depicting representatives from across the empire bringing tributes to the king.

© Getty Images, Wiki Commons; Bontenbal; dynamosquito; Gaja; Jona Lendering; Luis Argerich



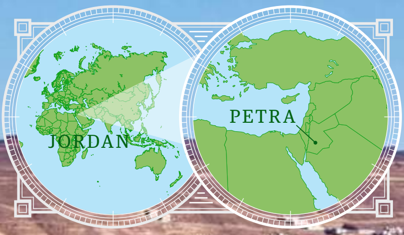
The remains of Persepolis

Despite being burned down under order of Alexander the Great, some of Persepolis can still be seen. The stairways up to the Apadana, for example, give a small view of how grand the architecture was. The skeleton of the Tachara and the Gate of All Nations also offer a glimpse of the city's scale.

© Getty Images

PETRA

Forged out of the cliffs, Petra is a rock-cut marvel that stands as testament to the architectural and engineering skills of its Nabataean creators



Frankincense resin isn't much to look at. The first time you see the dull-yellow lumps, it's hard to feel particularly inspired. Made from the dried-out sap of the Boswellia tree, these simple, knobbly marbles would be the catalyst for a trade route that, at its height, stretched west to the Mediterranean shore and north and east towards Asia Minor and Persia. The tribe of pastoral nomads that controlled that route would create one of the Middle East's most astonishing and inspiring ancient cities.

Carved out of the pink-tinged sandstone cliffs of Jordan's ruggedly arid Wadi Araba region, Petra's towering tombs and monuments are a breathtaking relic of the wealth and power of the Nabataean Kingdom. Today, the remains of the Nabataeans' grand capital, veiled within the surrounding mountains, showcase the civilisation's architectural ingenuity and a staggering understanding of hydraulic engineering. However, none of it would have been possible without those humble-looking lumps of frankincense.

Incense was a big business in antiquity. All of the Mediterranean and Near East empires coveted aromatics, such as frankincense and myrrh, for their religious rituals as well as for medicinal purposes. The Hittites, Egyptians, Phoenicians, Assyrians, Greeks and later Romans all believed these incenses to be essential elements in their worship. The only problem was that these precious substances were only found in a few select geographical areas.

Frankincense and myrrh trees are endemic to the southern region of the Arabian Peninsula (today's Oman and Yemen). Trade in their resins was probably originally established by the Yemeni

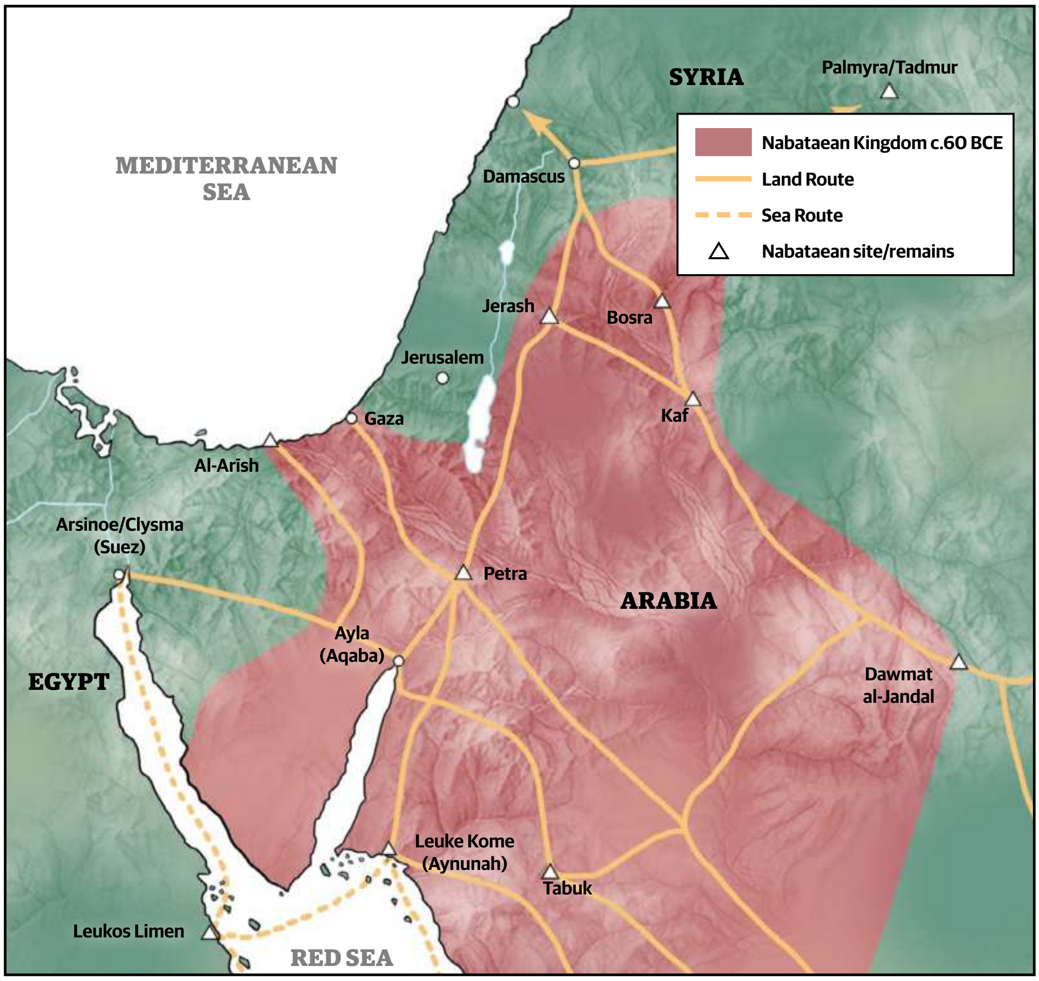
Minaean tribe, who utilised middlemen to help on the trade route once it passed beyond their area. In northern Arabia, those middlemen were a tribe of wandering desert herders called the Nabataeans, whose dabbling with the aromatics trade was beginning to make them very wealthy.

By the 2nd century BCE, those same middlemen started to take over the entire incense route, carving out a niche for themselves as trade controllers for the region. From then on, the aromatics from Arabia, as well as sought-after spices from as far away as India, would only flow west under their command. The riches and power this brought the Nabataeans meant a need for more centralised organisation and an end to nomadic life. Petra was to be the great jewel of a capital at their kingdom's central core.

It's not known exactly when the Nabataeans first moved into the canyons and valleys of southern Jordan (the Biblical land of Edom) but archaeological evidence shows that they had utilised this area since at least the 3rd century BCE. Simple Nabataean building remains – most likely storage buildings that would have been erected near their nomad tents – dating from this time have been unearthed in Petra. By the 2nd century BCE though, as the Nabataeans organised themselves from various collectives within the tribe to be ruled over by one king, this easily defendable spot they'd previously used as a camp began to be used as their power base.

For a fiercely independent people, Petra's near impregnability would have made it an attractive site. Already in 312 BCE they had repelled attacks on their area by the army of Macedonian General Antigonus I Monophthalmus (commonly known as Antigonus the One-Eyed) and stymied further encroachment by bribing would-be conquerors with diplomatic gifts. They chose their site so well, in fact, that after their eventual demise, the grand city of Petra would fade from history, forgotten by all but the local tribes of the area. The Crusaders of the 12th century knew of it, even building two fortresses on mountain summits within the Petra area, however it wasn't until the Swiss explorer Johann Ludwig Burckhardt passed through the area in 1812 with a local guide who knew the way that Petra was reintroduced to the Western world.

Burckhardt was awed by the towering monuments cut from the rock when he entered Petra. It's the same emotion that visitors experience today. The Siq, a narrow ravine pinned between dramatically soaring rock walls up to 180 metres high, guides visitors into a vast area of furrowed wadis (valleys) between rugged jebels (mountains). The 39.6-metre-high Al-Khazneh (the Treasury) looms over the main entrance into the city from the Siq, while up a series of processional staircases cut into the mountainside of Jebel ed-Deir is the colossal 45-metre-high façade of Ed-Deir (the Monastery), which dwarfs all who gaze up at it. Between these two most famed and photographed monuments is the wide main wadi with numerous tomb façades studding the cliff faces and a grand colonnaded street, lined with temple ruins, that was once Petra's city centre.



> "For a fiercely independent people, Petra's near impregnability would have made it an attractive site"

The stonemasons carved Petra's oversized monuments into the high cliffs without the use of any specialised technology. Fortunately for us, a number of unfinished façades within Petra have allowed archaeologists to glean a clear idea of their building method. It is known that the Nabataeans began by carving at the highest point of the building, and then worked downwards towards the ground, with the workers probably using either scaffolding or rope in order to climb up to work at the higher levels. Using just pick axes and chisels, the craggy rock face was first smoothed out to create a flat surface, before the building's design was outlined upon the rock. Originally, the detailed carving work of the façades might have been carried out by master stonemasons brought in from cities such as Alexandria in Egypt, who went on to teach local artisans their craft. When the decoration was finally finished, the cubic interior chambers were then hollowed out from the cliff.

An economy fed by commerce imbued the Nabataeans with a distinctly cosmopolitan outlook. Exposed to the lifestyles and cultures of many peoples and empires through their travels and trade, these were a people who looked outward and were unafraid of new experiences and influences. This natural confidence developed into a talent for cherry picking the best bits of other cultures and adapting and fusing it to suit their needs. Petra's architecture is an expression of their eclectic style.

Nabataean architecture in its purest stylistic form is quite austere and angular. No figurative images are displayed, and there are little in the way of ornate flourishes. Earlier dated tombs often use an Assyrian crow-step (a simple staircase design) on their upper level, with plain columns siding a mammoth doorway decorated with a Doric frieze. Gods are represented in rock reliefs by plain stone blocks or simple, and often otherwise unadorned, rectangular carvings known as betyls ('house of god'). However, later buildings became more ornate.

Petra's famous Al-Khazneh has a distinctly Hellenistic design and mixes iconography and

View of Al-Khazneh (the Treasury), set into its high cliff face

symbolism from Egypt, Rome and Greece. Petra's theatre is built in classic Roman style but adjusted accordingly to be suitable for the city's unique rocky location – being carved out of the bottom of a cliff. This fluidity and assimilation of different cultural influences is best seen in how the Nabataean pantheon of gods slowly evolved, changed and was represented.

While the Nabataeans continued to honour their traditional Arabian gods, they had no problem merging their own deities with those from neighbouring cultures. In the Nabataean pantheon, the overall god was Dushara, who, with goddesses al-Uzza and Allat, reigned over a series of lesser deities. Representations of foreign Greek, Roman, Phoenician, Egyptian and Syrian gods, particularly Aphrodite, Osiris, Isis, Zeus, Dionysus, Atargatis and Tyre, slowly entered the mix though. The central bas relief on Al-Khazneh's façade depicts two Amazonians either side of a goddess thought to be either the Roman Tyche or Egyptian Isis. Both foreign goddesses would have been identified with their traditional goddess al-Uzza, and the Nabataeans seem to have had no problem featuring

The Siq's water channels were part of the Nabataeans' vast hydraulic engineering works these deities figuratively, unlike their original Arabian gods.

It is in their engineering ability, though, that the Nabataeans' talent for adaptation truly shines. As desert nomads, living in one of the world's harshest environments, they fully understood the great importance of water to thrive, and in Petra, they utilised their skills to its greatest achievement. Petra was prone to dangerous flash flooding during the winter months with the flood torrents flowing down Wadi Musa (the valley just outside of the city area), smashing through the Siq and down into the valley basin of the main city; a seasonal disaster that could cause serious damage and loss of life in the city. In the 1st century BCE, Nabataean engineers diverted this water into the side canyon of Wadi Muthlim by building a dam structure just outside the entry to the Siq. To demonstrate how effective these ancient engineers were with this method, today, modern dam structures built in the 1990s have been constructed over the original building works.

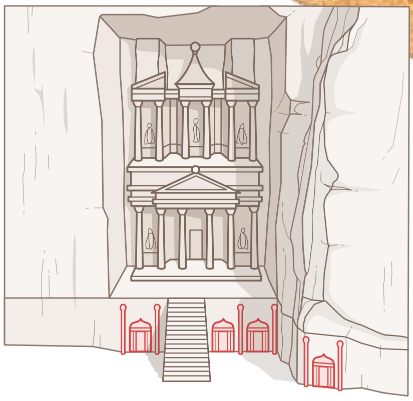
Nabataean engineers also harnessed the water of the nearby springs of Ain Musa and Ain Braq for everyday use, creating a vast network of water channels from the springs that flowed through the countryside into the city that could supply all of Petra's daily and agricultural needs. Evidence of these vast hydraulic engineering works can still be seen in the surviving terracotta water pipes that run along the walls of the Siq.

Despite all these remaining building works that show how Petra managed to function and thrive, today it can be difficult for visitors to Petra to evoke a sense of a once-bustling city. Walking between Petra's gigantic tomb façades can seem more like discovering a vast ancient necropolis rather than a lived-in capital. Petra, though, was very much a busy hub of commerce. The trouble is that the residential quarters, built on a much more modest scale than its megalithic tombs, have long since crumbled away. The small amount of remains of residential houses that have been excavated so far (on the Zantur slope behind the city centre ruins) are also easily missed by visitors in favour of those awe-inspiring cliff-side tombs.

Petra's city centre is the best area to imagine what the city would have once looked like. Constructed at some stage in the early-1st century when the Nabataean kingdom was at its height, a grand 18-metre-wide colonnaded street, lined with public and civic buildings, was constructed in the wadi's basin at Petra's core. This would have been the downtown area of the city. Along this road are three of Petra's major public buildings. The Qasr al-Bint (theorised by most archaeologists to have probably functioned as the city's main temple), the later constructed Temple of the Winged Lion and the vast terraced structure known as the Great Temple, which, quite probably, despite its modern name, functioned as an administrative centre rather than a place of worship.

From the end of the colonnaded street, a trail threads its way up a series of processional

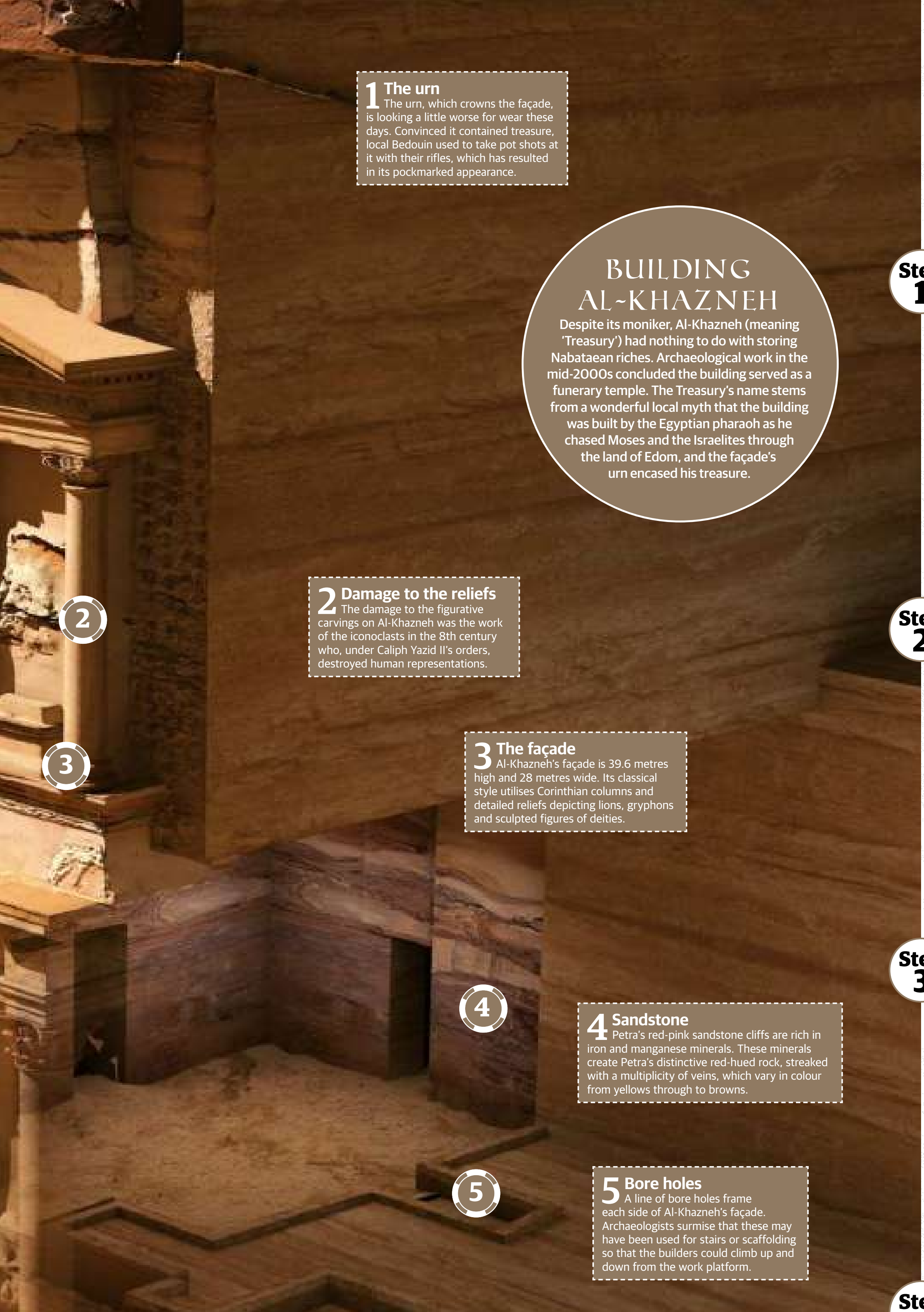
7 The lower tombs
Excavations that begun in 2003 discovered four burial chambers with pediment-style façades six metres below the surface of Al-Khazneh. Findings within the tombs – including bone fragments – allowed archaeologists to date the tombs to the 1st century BCE.



6 Ground surface level
How did tombs get under the ground below Al-Khazneh? They didn't. When the Nabataean dam finally disintegrated, flash flooding returned to the Petra area. The stone and sand deposited by the torrential waters over centuries gradually built up the ground by six or seven metres to today's level.

BUILDING AL-KHAZNEH

Despite its moniker, Al-Khazneh (meaning 'Treasury') had nothing to do with storing Nabataean riches. Archaeological work in the mid-2000s concluded the building served as a funerary temple. The Treasury's name stems from a wonderful local myth that the building was built by the Egyptian pharaoh as he chased Moses and the Israelites through the land of Edom, and the façade's urn encased his treasure.



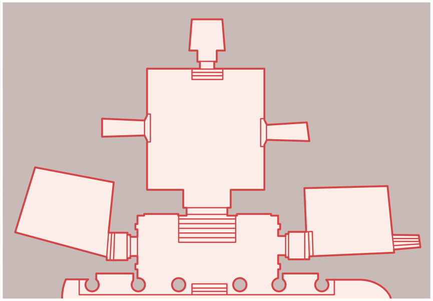
1 The urn The urn, which crowns the façade, is looking a little worse for wear these days. Convinced it contained treasure, local Bedouin used to take pot shots at it with their rifles, which has resulted in its pockmarked appearance.

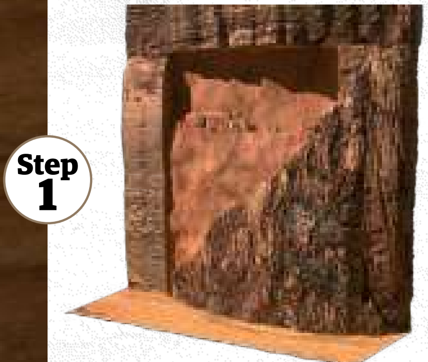
2 Damage to the reliefs The damage to the figurative carvings on Al-Khazneh was the work of the iconoclasts in the 8th century who, under Caliph Yazid II's orders, destroyed human representations.

3 The façade Al-Khazneh's façade is 39.6 metres high and 28 metres wide. Its classical style utilises Corinthian columns and detailed reliefs depicting lions, gryphons and sculpted figures of deities.

4 Sandstone Petra's red-pink sandstone cliffs are rich in iron and manganese minerals. These minerals create Petra's distinctive red-hued rock, streaked with a multiplicity of veins, which vary in colour from yellows through to browns.

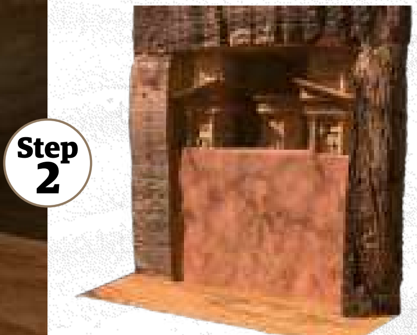
5 Bore holes A line of bore holes frame each side of Al-Khazneh's façade. Archaeologists surmise that these may have been used for stairs or scaffolding so that the builders could climb up and down from the work platform.





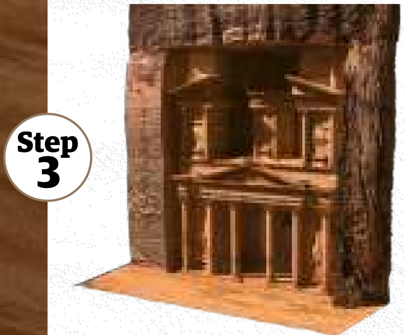
Flatten the cliff face

Starting 39 metres up the cliff, the builders tunnelled straight along the cliff face to create a platform to stand on. Then, using pickaxes, they gradually worked downwards, creating a smooth, flat rock surface they could then work from.



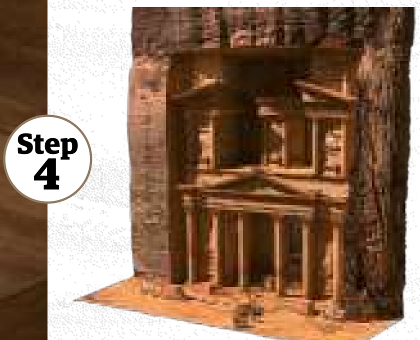
Carve the façade

Another wider ledge was cut from which to carve downwards to create the decorative façade. There was no margin for error. Builders had to ensure that the weight of the upper section did not become too heavy for the bottom, causing it to collapse.



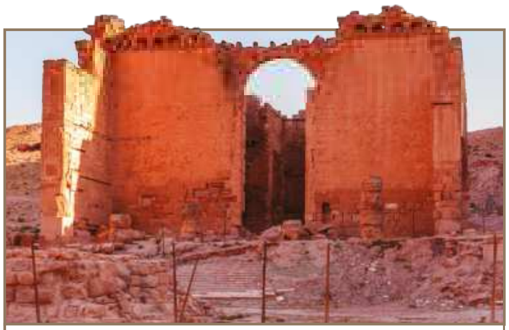
Create the interior

The same top-down method was used to create the entrance portico behind the columns, and the inner chambers. A tunnel was cut into the cliff before being widened into the portico, and then further tunnels created, which became chambers.



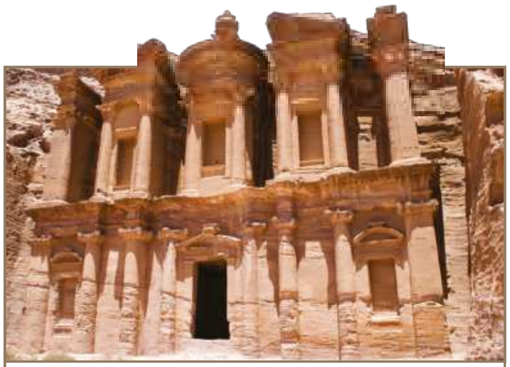
Remove the waste

Builders removed 6,000 cubic metres of rock from the interior. The resulting rubble created from both carving the façade and hollowing out the interior chambers was cleared away and utilised for building other structures.



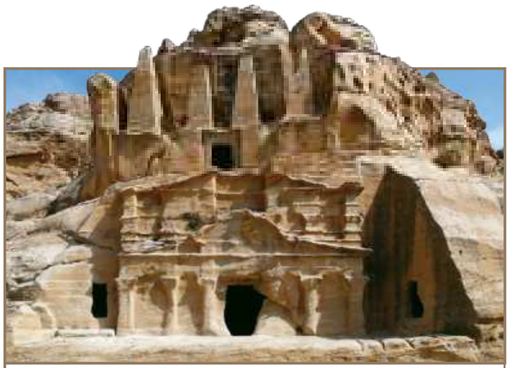
1 Qasr al-Bint

The 'Palace of the Pharaoh's Daughter' is thought to have served as the city's main temple. Worship of Nabataean deities Dushara and al-Uzza is thought to have been centred here.



2 Ad-Deir

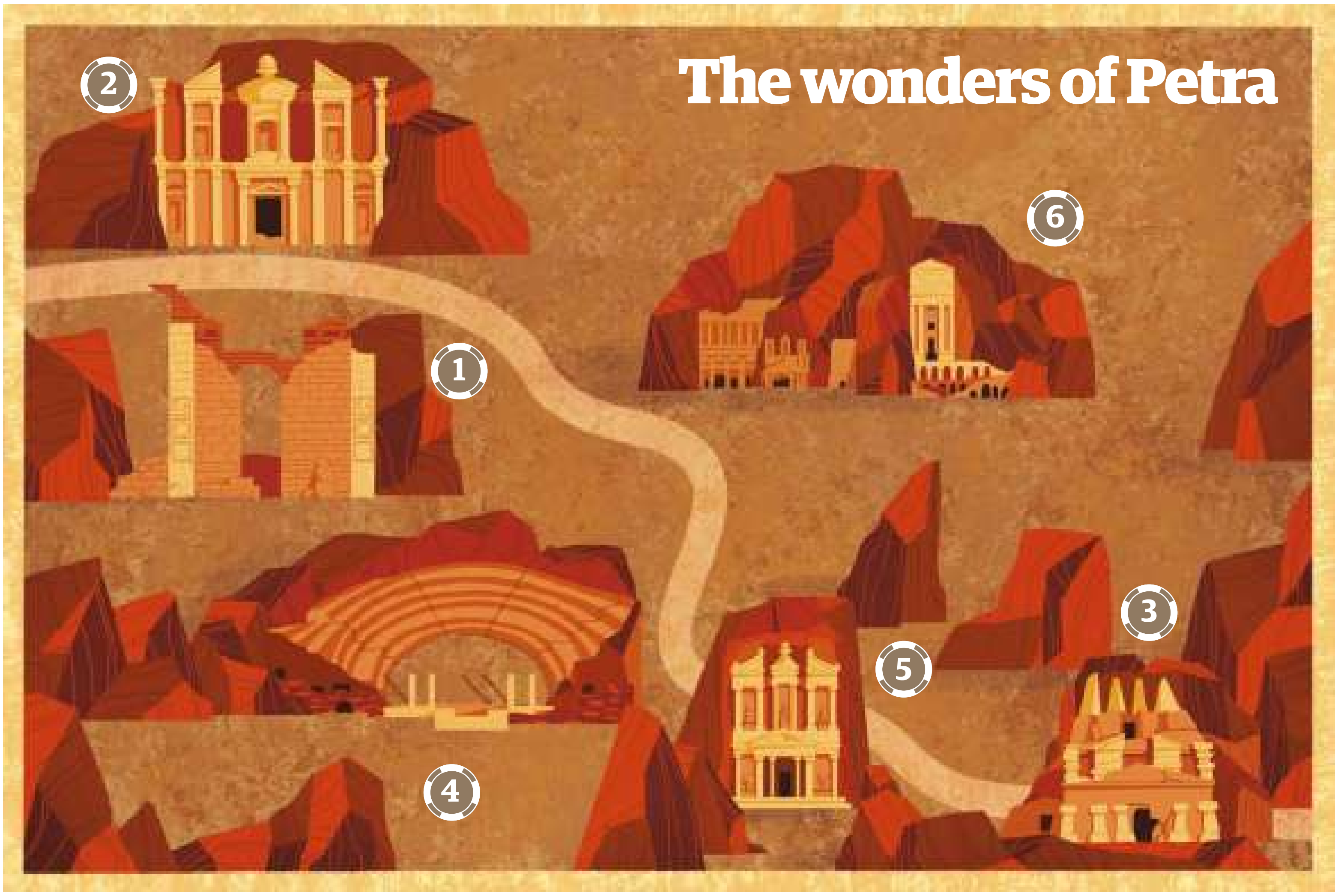
Petra's largest monument, the 'Monastery' sits on a high plateau of Jebel ad-Deir. It's thought to have served as a temple-cenotaph commemorating king Obodas I.



3 Obelisk tomb

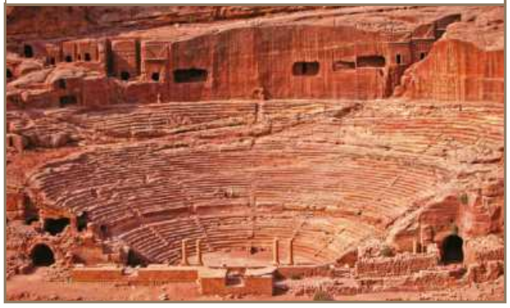
Named for the four obelisks that dominate its façade, the Obelisk tomb sits above the façade of the Bab el Siq Triclinium (a banqueting hall), which is believed to have been carved later.

The wonders of Petra



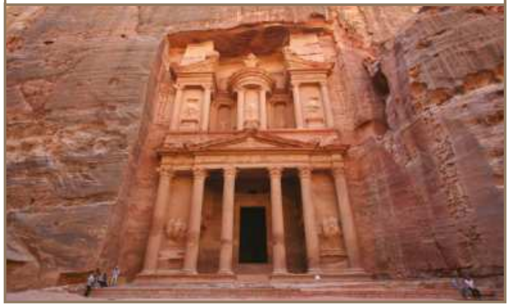
4 The theatre

The theatre exactly follows Roman design rules but with the Nabataean architectural twist of the entire structure being hollowed out from a sheer rock face.



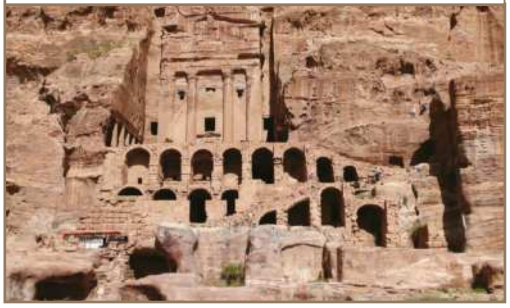
5 Al-Khazneh

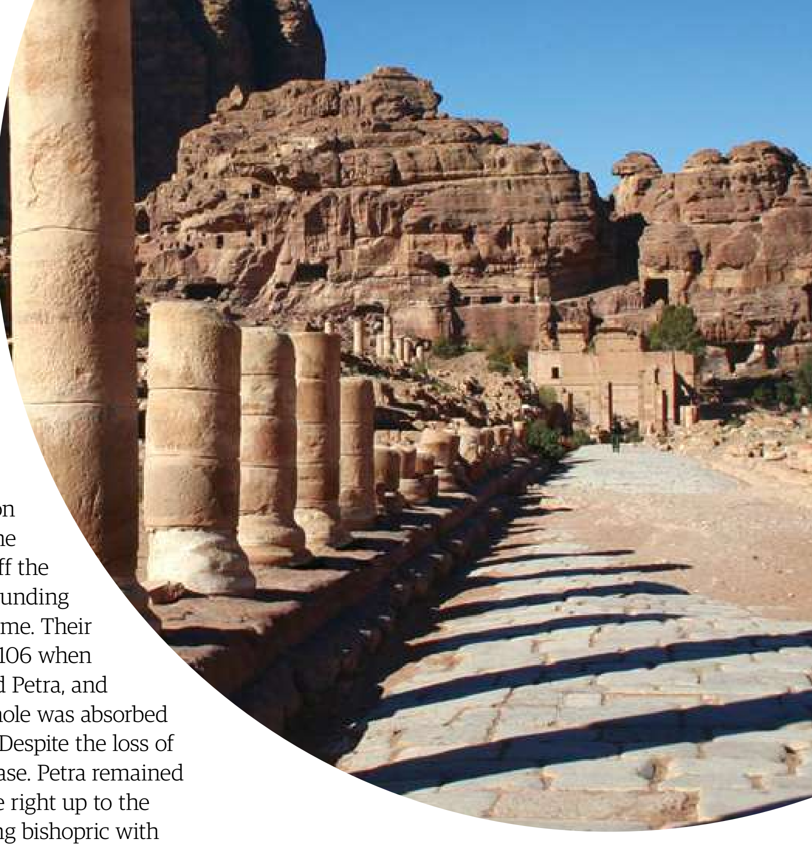
Archaeologists theorise that this was the mortuary temple of either king Aretas III or Aretas IV, built as a place to worship the sovereign as well as being his burial place.



6 Urn tomb

The multi-level Urn Tomb is the first of five façades (known together as the Royal Tombs) that loom over Petra's colonnaded street from a ledge cut into Jebel al-Khubta.





staircases to a high plateau upon Jebel ed-Deir where the enormous façade of Ad-Deir (the Monastery) sits carved into a cliff. Petra's largest monument, Ad-Deir, has a name – like Al-Khazneh and the Great Temple – that is something of a misnomer. Most experts theorise that its original function was as a cenotaph-temple (built in memorial to one of Petra's sovereigns). Its modern name stems from the series of crosses, dating from Petra's Byzantine era, found carved into the walls of the interior chamber when the building seems to have been adapted to function as a place of Christian worship.

Petra sat right at the core of the Nabataean kingdom as the main centre along the incense route for camel caravans coming in from or heading out to the desert. However, control of the entire trail's tentacles meant that smaller Nabataean fixed settlements and caravan stations can be found scattered all along the route. On the Arabian Peninsula (in modern-day Saudi Arabia), the ruins of Hegra (now known as Mada'in Saleh) contain 131 Nabataean tomb façades carved into the cliff face. This would have been an important resting point along the trail through the Hejaz region. In Israel's Negev Desert, the ruins of Nabataean towns Haluza, Mamshit, Avdat and Shivta linked Petra to its Mediterranean port at Gaza. Nabataean inscriptions and ruins have been found in Egypt's Sinai Peninsula, and in the town of Bosra, in southern Syria, which in the late-1st century became the Nabataeans second capital, there are substantial remains.

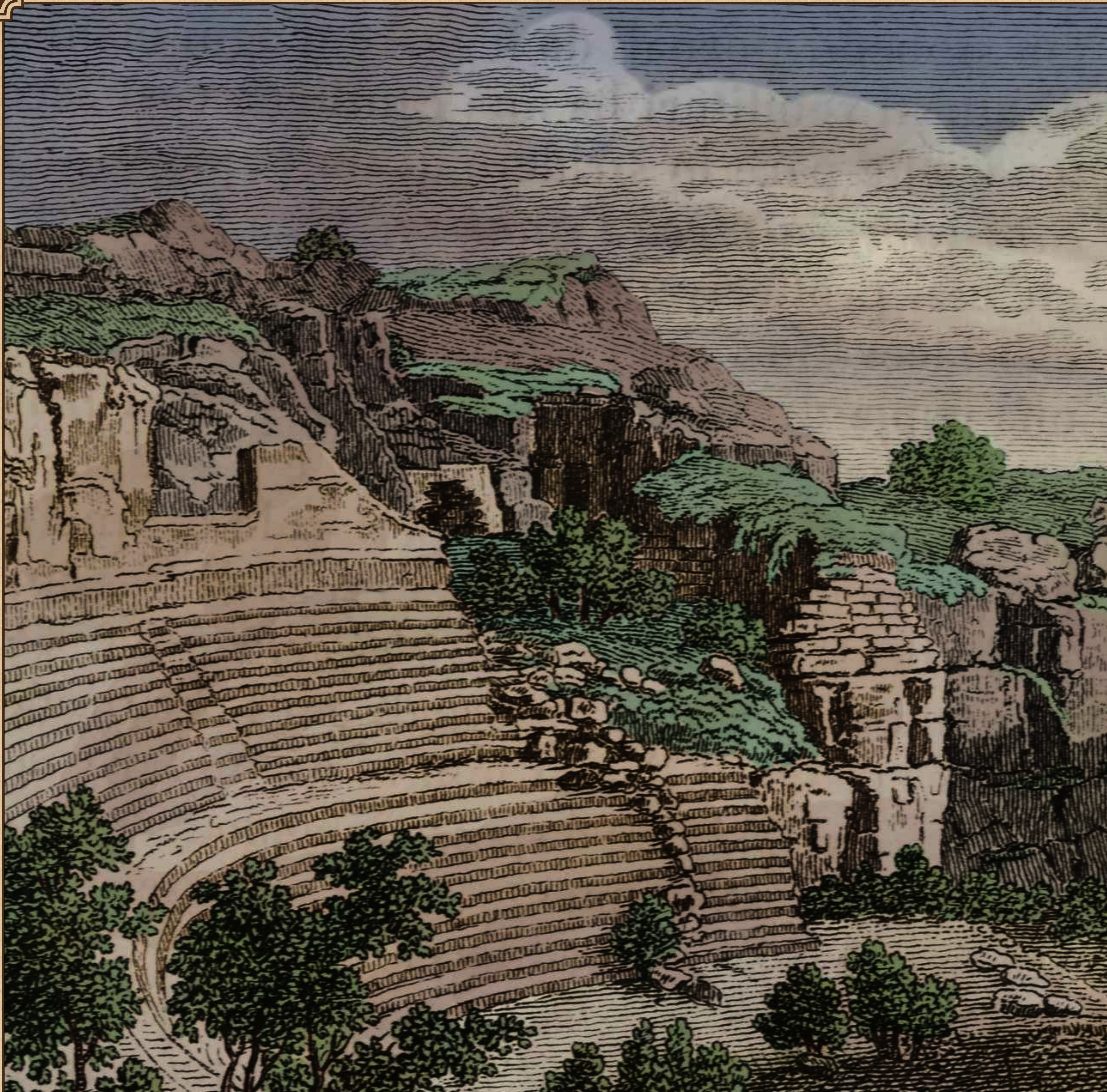
This control, along with a powerful centralised organisation and diplomatic means, meant the Nabataeans managed to stave off the empire builders who were surrounding them for an impressively long time. Their autonomy was finally ended in 106 when Trajan's Roman army conquered Petra, and the Nabataean kingdom as a whole was absorbed into Rome's province of Arabia. Despite the loss of independence, trading didn't cease. Petra remained an important commercial centre right up to the 3rd century, by then a flourishing bishopric with a large Christian population. It was the region's many earthquakes that finally spelled doom for the city. After two violent ones in 363 and 419, and then another in 551, much of the city was deserted and left to the rubble. With the city's demise, the Nabataeans, who had once played such a dominant role in the region, seemed also to vanish.

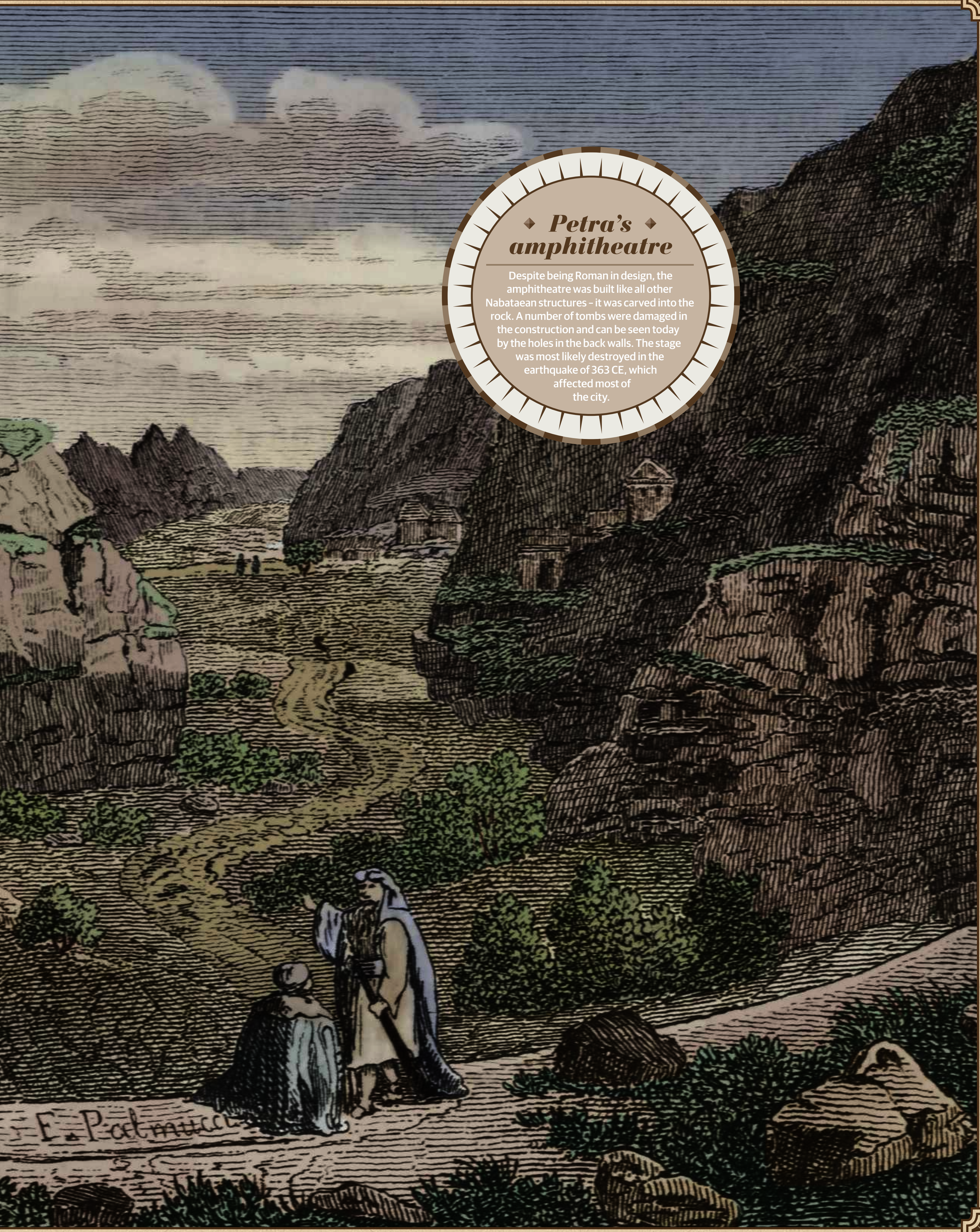
> "These were a people who looked outward and were unafraid of new experiences and influences"

When Johann Ludwig Burckhardt first entered the city, he encountered the Bdoul tribe, who lived amid the ruins. This tribe lived in caves surrounding the monuments and in the tomb chambers themselves right up until the mid-1980s when they were finally moved by the government into modern housing at a purposely built village settlement near the archaeological site. Some of the Bdoul claim to be the descendants of the Nabataeans, but this theory has never been proven. Unlike Petra's remarkable buildings and colossal façades that have stood the test of time, what happened to the people who built them remains one of the Middle East's enduring mysteries.

Petra's main trail – from Al-Khazneh to the colonnaded street – is lined with tomb façades

© Getty Images, Kym Winters, Shutterstock, Sol90 Images





Petra's amphitheatre

Despite being Roman in design, the amphitheatre was built like all other Nabataean structures – it was carved into the rock. A number of tombs were damaged in the construction and can be seen today by the holes in the back walls. The stage was most likely destroyed in the earthquake of 363 CE, which affected most of the city.

© Getty Images

PALENQUE

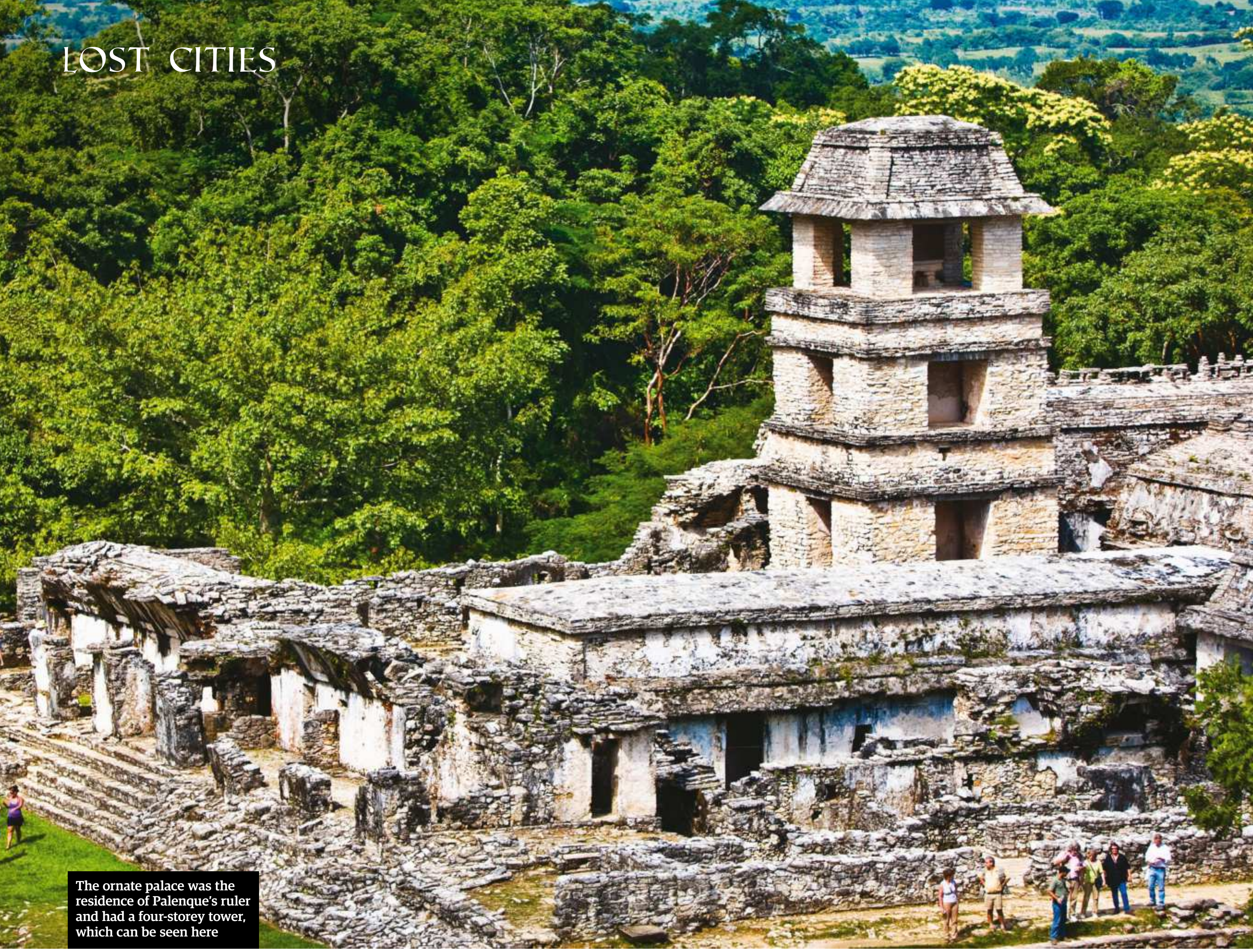
This ancient city, once lost to the jungle, contains some of the finest art and architecture ever produced by the Maya

MEXICO
PALENQUE

The Maya called it Lakamha, meaning 'Great Water', but we know it today by its Spanish name. Palenque was declared a UNESCO World Heritage Site in 1987 and attracts around 600,000 visitors a year. Situated in the state of Chiapas in modern Mexico, around 120 kilometres south of Ciudad del Carmen and near the Usumacinta River, Palenque was once the capital of the B'aakal kingdom, a regional political unit. It sits at the foot of the Chiapas highlands and looks out over the Gulf coast plain – a strategic position that helped it to grow and flourish as a trade centre. At its peak in the 7th century, Palenque's influence stretched right along the river basin and beyond.

The city was densely populated and had a planned layout, with residential and administrative buildings as well as magnificent temples and a grand palace complex. Built on different levels, with some temples standing on naturally occurring hills, the structures were made of local limestone with wooden lintels and would have been brightly decorated in shades of blue, yellow and red – red being the colour of the East, of fire and of energy. Palenque was a place of sophistication, with fine architecture, elaborate carvings, stucco work and indoor plumbing. But it was also a site of human sacrifice.

There is evidence that farming took place in this area around 100 BCE. However, construction of the city appears to have begun a few hundred years later. Inscriptions at the site suggest that the first king was Ku'uk' Bah'am, who reigned for four years from 431-35. However, little appears to remain from his era, for in 599 and again in 611, the city was attacked and sacked by neighbouring Calakmul.



The ornate palace was the residence of Palenque's ruler and had a four-storey tower, which can be seen here

After a few years of decline, it was rebuilt on a grand scale by the most successful of all its rulers, K'inich Janaab' Pakal I – also known as Pakal the Great (r.615-83). He came to the throne at the age of 12 and very likely ruled with his mother, Sak K'uk', for a number of years. During his reign, the city flourished and most of the known palaces and temples were built.

Work continued under his successors, his sons K'inich Kan B'alam II (r.684-702) and then K'inich K'an Joy Chitam II (r.702-711/21), who extended and remodelled structures, turning Palenque into the finest of all the Maya cities. Buildings were given height, light and elegance by the use of vaulted roofs, wide doorways and T-shaped windows. There were spacious courtyards, and structures were richly decorated with stucco and carvings.

The remains of many significant buildings can still be seen today, and are impressive even in their ruined state. They include the palace, work on which probably started in Pakal's time and continued over several generations. A complex structure built on a raised platform, it served as the ruler's residence and was the focal point of the city. With internal courtyards, vaulted ceilings and a four-storey tower, it provided accommodation for a retinue of servants as well as nobles. It was provided with water via an aqueduct, and came equipped with steam baths and toilets. The aqueduct was pressurised – the earliest known on this continent.

Work on the magnificent Templo de las Inscripciones (Temple of the Inscriptions) probably began around 675. A step pyramid that was constructed to serve as Pakal's tomb, it has nine levels, which are thought to represent the nine levels of the Maya underworld. Pakal obviously wanted to be sure his tomb met with his satisfaction, as construction began during his lifetime. The name derives from the carved hieroglyphic inscriptions on the walls. Written in Maya text, they outline 180 years of Palenque's history, including key events in Pakal's life.

A short distance away is a group of temples known as the Temple of the Cross Complex, which was commissioned by Pakal's immediate successor, his son Kan B'alam. It consists of the Templo del Sol (Temple of the Sun), the Temple de la Cruz (Temple of the Cross, the largest of the group) and the Templo de la Cruz Foliada (Temple of the Foliated Cross). They are dedicated to three Maya gods and are rich in imagery and symbolism. Carvings of a cross that appear in some of the structures are a representation of the *Ceiba*, the tree that was believed to hold up the universe. Kan B'alam himself is represented, both as a child and later as an adult on his accession.

Other temples, tombs and residences are scattered across the archaeological site and extend into the jungle. Perhaps surprisingly, there are even the remains of a court on which the Mesoamerican ball game was played. This sport involved the use of a heavy rubber ball, which players struck with their hips. It was not only a recreational game, but also had ritual aspects – even being associated with human sacrifice.

Around 711, Palenque was sacked again – this time by its rival state Tonina – and the then-king was taken prisoner. The city survived, but hostilities with Tonina appear to have continued. The glory days were over and, by the end of the 8th century, construction had ceased and Palenque was abandoned. Its lavish civic and ceremonial buildings were smothered by the jungle, not to be re-awakened until the 16th century, when the Spanish colonised the area. The first western explorer to find it was Father Pedro Lorenzo de la Nada, who named it Palenque, or 'fortification'. In

1567, he wrote the first published account of this lost city. However, it was not until the 1780s that surveys of the site began. In 1787, an expedition under the command of Colonel Antonio del Río investigated the ruins, his forces damaging some structures in the process. On the expedition was a surveyor and architect, Antonio Bernasconi, who drew the first map of the site and made a number of drawings of some of the sculptures.

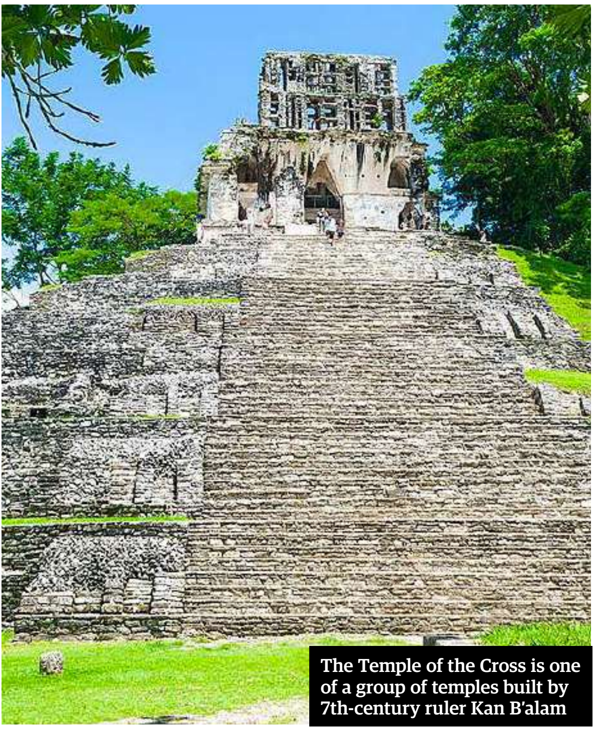
Over the years, other explorers followed in their footsteps, making more drawings and maps and later taking photographs. In 1840, the explorer John Lloyd Stephens and his companion Frederick Catherwood, an architect and draftsman, spent about a month at Palenque carefully documenting structures, including several important temples. Considered the pioneers of Maya archaeology, they later produced an illustrated book on the site.

However, it was not until 1949 that excavations began in earnest. They were carried out by Mexican archaeologist Alberto Ruz Lhuillier, who realised that a stone slab on the floor of the Temple of the Inscriptions was designed to be raised. Beneath it was a stairway filled with rubble, which took several years to clear. Eventually, in 1952, he reached the bottom where, in a richly decorated crypt deep beneath the temple floor, he discovered the sarcophagus of Pakal the Great. The enormous stone lid was carved and depicted the ruler emerging from the jaws of the underworld, reclining on the mask of the sun god – presumably suggesting he had made the transition from life to death and had perhaps been reborn as a deity.

Further investigation revealed the remains of the king, who had been interred along with an elaborate jade death mask and a collection of jade jewellery. Outside the door to the burial chamber, the archaeologist found the bones of several people – men and women who were clearly sacrificial victims, slaughtered to accompany the ruler on his last journey. Later work revealed the presence of a 'psychoduct', which led from the tomb, along the stairway and out through a hole in the stone covering. It is still something of a mystery, but might relate to the departing of the soul.

This was not the last discovery at the site. In 1994, a Mexican archaeologist working under Arnoldo González Cruz discovered another tomb within a smaller pyramid close to the Temple of the Inscriptions. Known today as the Templo de la Reina Roja (Temple of the Red Queen), it held the bones of more sacrificial victims, as well as a sarcophagus containing the remains of a woman who had been buried along with a collection of jade and pearl jewels. It was clearly the burial place of a woman of high standing, probably Pakal's wife. Her skeleton and other contents of the sarcophagus were covered with a bright-red dust made from cinnabar, the toxic ground ore of mercury.

The total archaeological area at Palenque extends 1,780 hectares, and 1,400 structures have been recorded. To date, only around ten per cent of those have been explored – the rest remain hidden beneath the jungle vegetation. There is still much to discover at this extraordinary Maya city, which, though 'lost' no more, is still full of secrets – some of which may never be revealed.


The Temple of the Cross is one of a group of temples built by 7th-century ruler Kan B'alam

1970s
Then & Now

Behind the Maya carvings

A carving in the Temple of the Foliated Cross celebrates the earthly realm and includes a depiction of maize, a plant that was so important in sustaining the Maya that they held it sacred. One creation story held that humans themselves were created from maize. The maize god appears here in his foliated (leafy) form, but could also be shown with a strikingly pointed tonsure, which echoed the shape of a cob of corn. Another temple at Palenque, known as the Temple of the Jaguar, contains a bas-relief carving of a ruler in the form of a jaguar and seated on a throne. Jaguars are immensely powerful cats, and were thought to protect royalty and also to facilitate communication between the living and the dead. The Maya name for jaguar, *b'alam*, was even incorporated into the names of some of the rulers of Palenque.

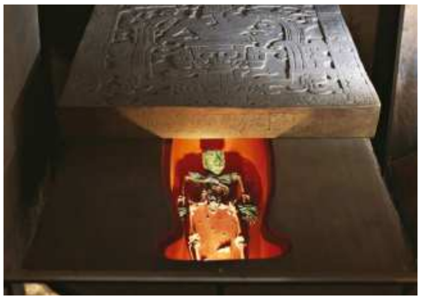
A rather different carving appears in the Temple of the Inscriptions. It depicts Pakal's immediate successor, his son K'inich Kan B'alam II, held in the arms of his ancestors and being presented as heir to the throne. He appears as a mix of human and divine: one leg is a serpent, the other a normal human leg, though with six toes on the foot. This might have been a physical characteristic, as the extra toe also appears in later portraits. By linking themselves with deities and emphasising their dynastic succession, the Maya rulers astutely manipulated history and myth to political ends and boosted their claims to power.

> "Palenque's lavish civic and ceremonial buildings were smothered by the jungle, not to be re-awakened until the 16th century"

Three great discoveries from Palenque

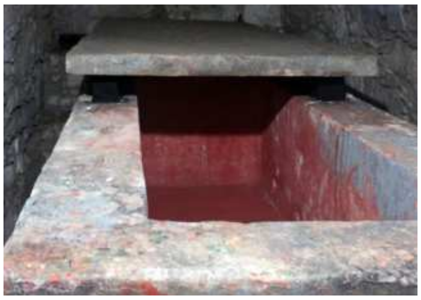
The tomb of Pakal

Had the archaeologist Alberto Ruz Lhuillier not lifted a stone slab from the floor of the Temple of the Inscriptions, this extraordinary tomb might still lie hidden today. It was found in 1952, deep below the temple.



The tomb of the Red Queen

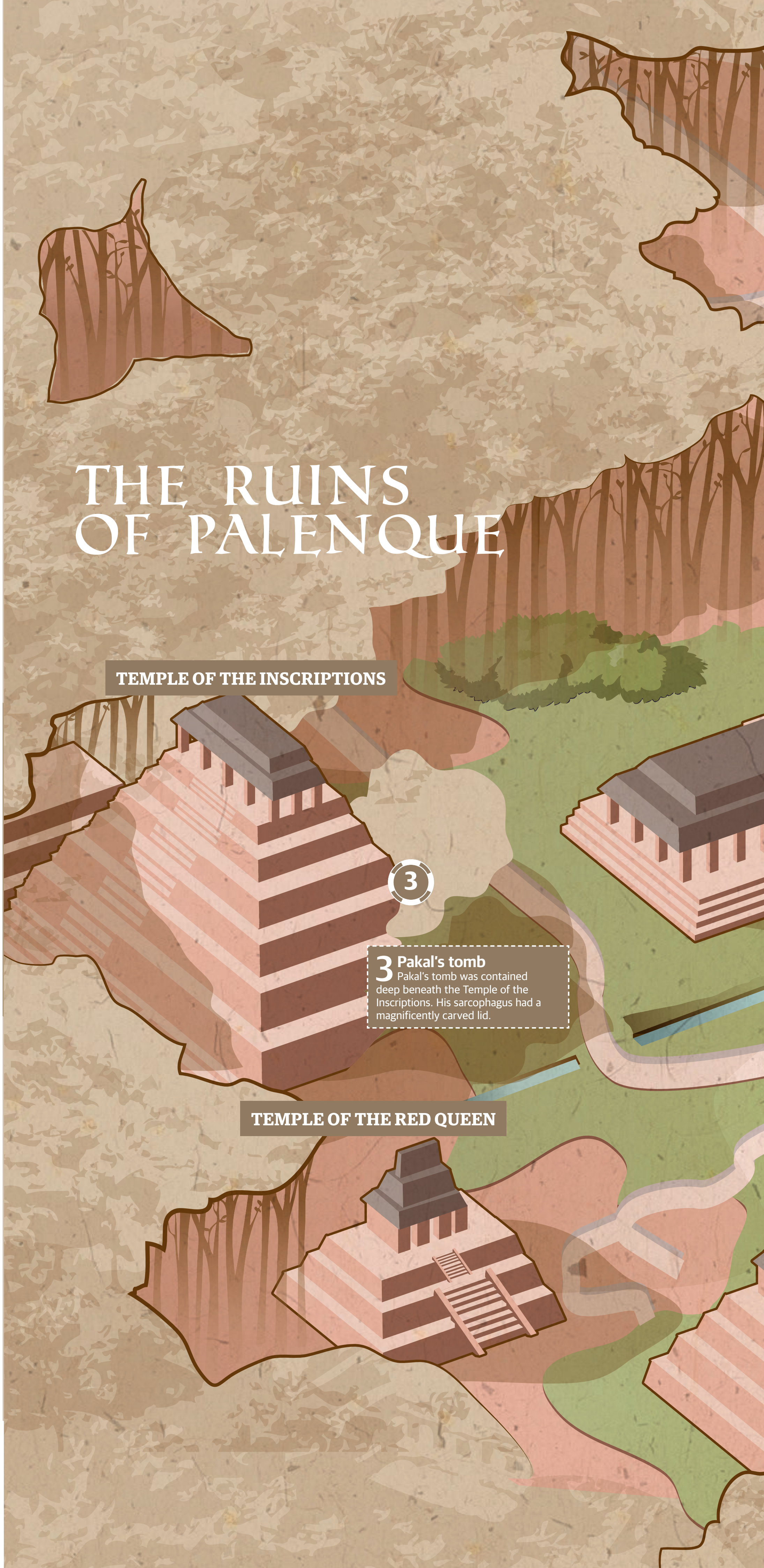
It was in 1994 that this tomb, probably containing the remains of Pakal's wife, was discovered. The contents of the sarcophagus were covered in cinnabar, a red powder. The colour red was associated with power and energy.



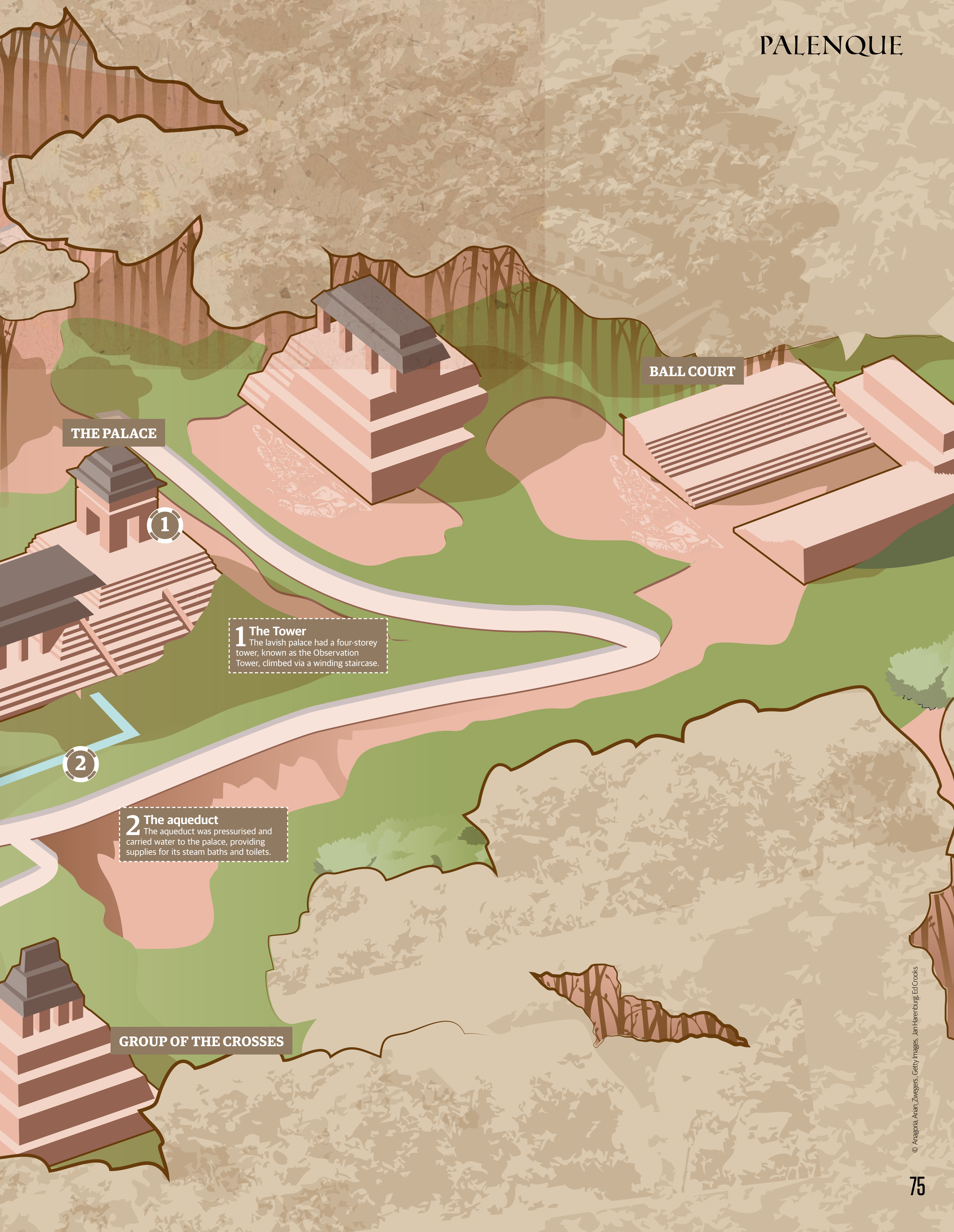
Maya hieroglyphs

The Maya text that appears on the walls of the Temple of the Inscriptions has proved invaluable to academics researching this ancient culture.

THE RUINS OF PALENQUE



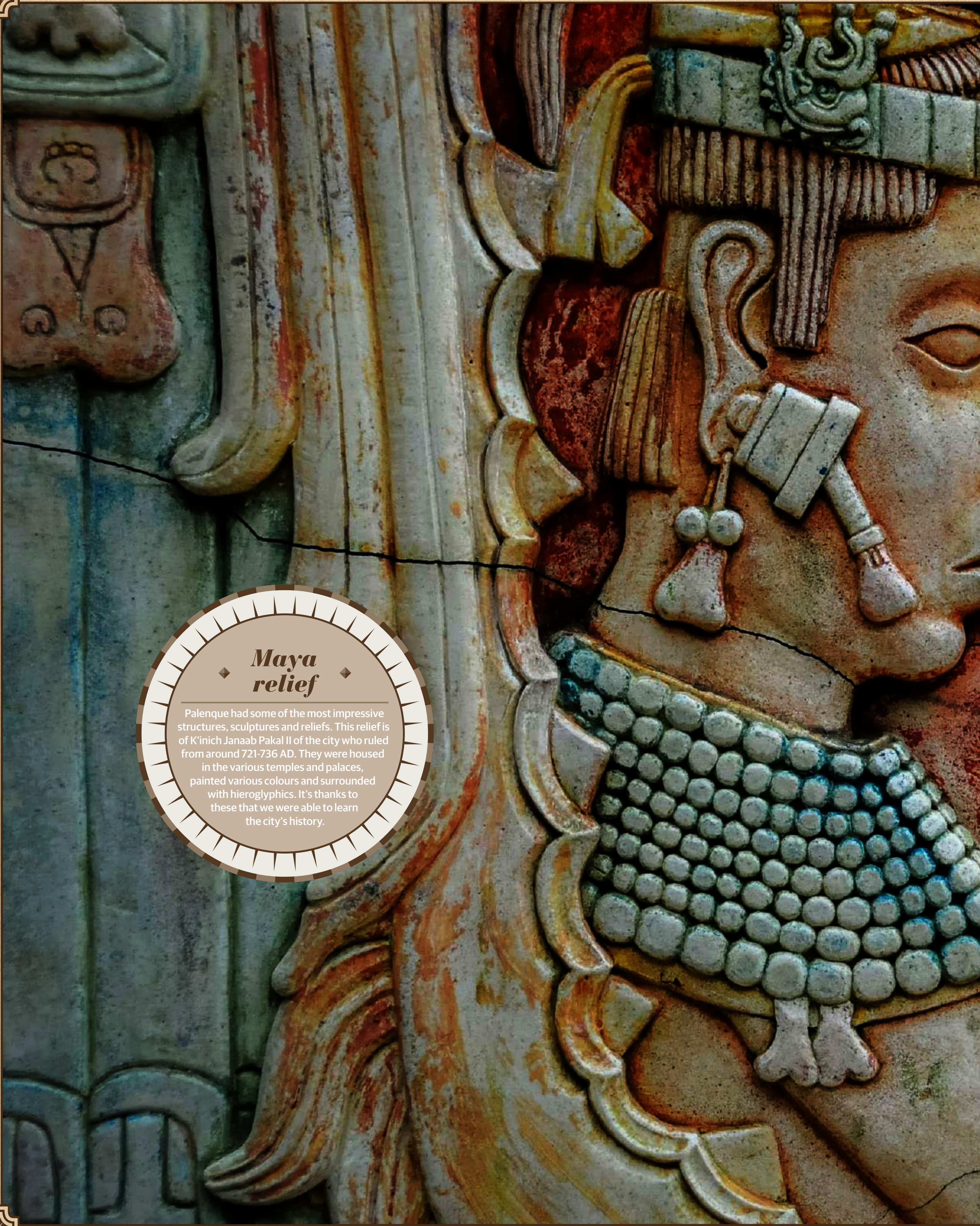
3 Pakal's tomb Pakal's tomb was contained deep beneath the Temple of the Inscriptions. His sarcophagus had a magnificently carved lid.


BALL COURT
THE PALACE
1
2
GROUP OF THE CROSSES

1 The Tower The lavish palace had a four-storey tower, known as the Observation Tower, climbed via a winding staircase.

2 The aqueduct The aqueduct was pressurised and carried water to the palace, providing supplies for its steam baths and toilets.

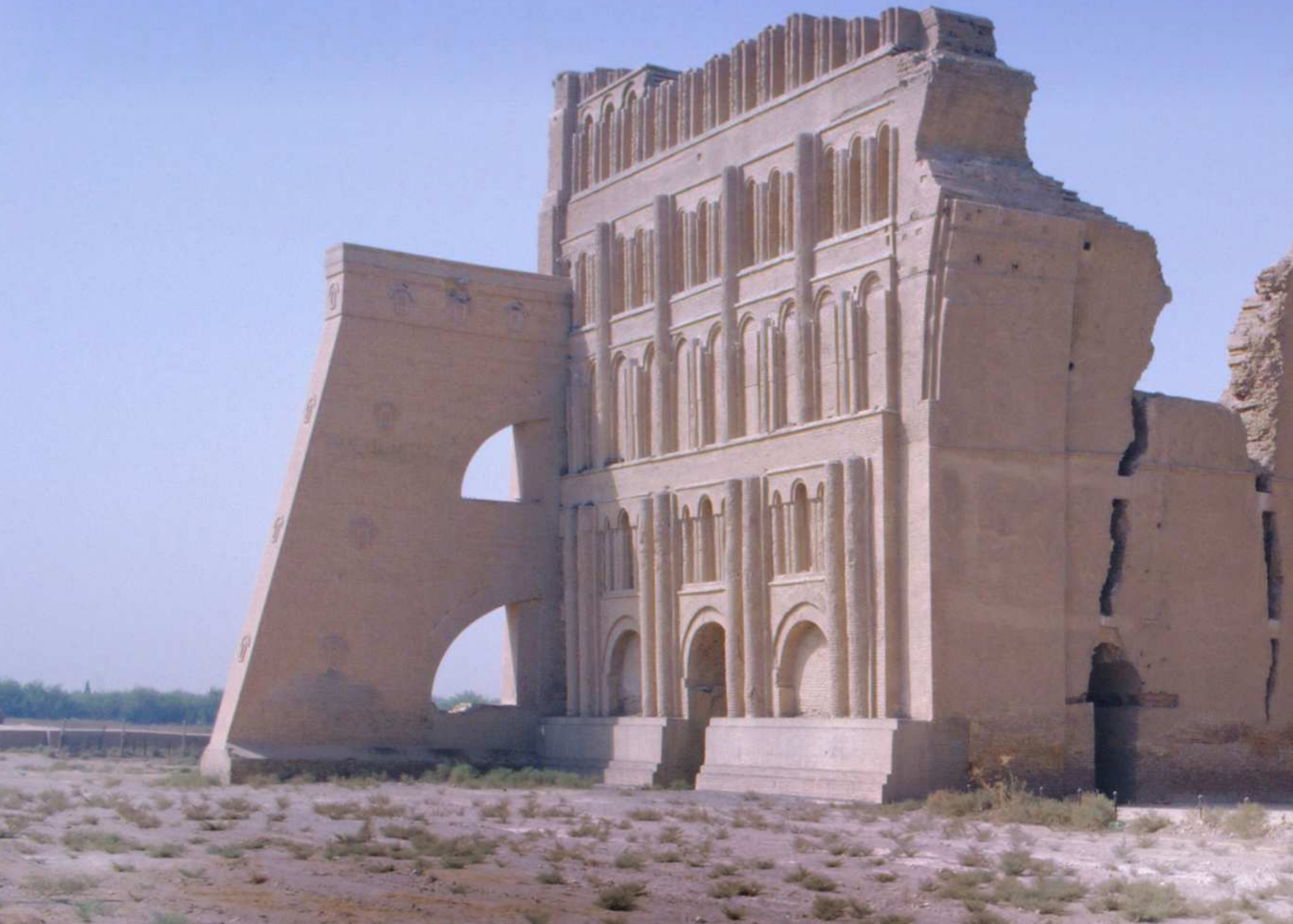
© Anagoria, Arian_Zwegers, Getty Images, Jan Harenburg, Ed Crooks



Maya relief

Palenque had some of the most impressive structures, sculptures and reliefs. This relief is of K'inich Janaab Pakal II of the city who ruled from around 721-736 AD. They were housed in the various temples and palaces, painted various colours and surrounded with hieroglyphics. It's thanks to these that we were able to learn the city's history.

© Getty Images



CTESIPHON

Once a great capital city to two powerful empires before the rise of Islam across Perisa, the metropolis that was Ctesiphon is now a bastion of long lost civilisations

IRAQ
CTESIPHON

Around 32 kilometres south east of Baghdad, a ruin stands resolute on the bank of the Tigris River, a once regal city reduced to broken stone and rubble. Today, it remains one of Iraq's most famous historical sites; a history rich with opulence, politics, religion and many a ruthless war. At the heart of this still grand spectacle looms Taq Kasra (the Arch of Ctesiphon), which is the largest brick-built arch in the world, towering above its visitors at an awe-inspiring 37 metres tall and 48 metres long. Despite all of the unrest in the region, it's become an extremely popular tourist hotspot, but it was once the jewel in the crown of many an Arab ruler before it eventually fell.

Long before it became a commercial metropolis of the ancient Arab world, and longer still before it effectively faded from memory, Ctesiphon was founded by King Mithridates I of Parthia, the ruler of one of Iran's largest political and military powers for almost 400 years. The Parthian monarch was fast expanding his empire, and it would be on the site of one of his many military camps in a tiny village called Opis that the first stones of Ctesiphon would be set in place. It was to become one of four palaces that would represent his royal supremacy, but it began as a mere village with a handful of homes to its name.

Situated across the Tigris from Seleucia, one of the largest and most prosperous Mesopotamian cities (a locale that would, eventually, be absorbed by Ctesiphon), this diminutive residence began to grow in its own right. According to Strabo, a Greek historian born almost two centuries after its founding, the village that soon swelled into a city also represented something of a cultural divide between the people of Seleucia and other Iranian tribes that had populated the region's many steppes. "This village the kings of the Parthians were wont to make their winter residence," he wrote. "Thus sparing the Seleucians, in order that the Seleucians might not be oppressed by having the Scythian folk or soldiery quartered amongst them."

Ctesiphon developed into a rich commercial metropolis, merging with the surrounding cities along both shores of the river

As the decades passed, Ctesiphon became a popular residence for the kings of the Parthians, with its closeness to the Tigris believed to provide a sense of health and restoration. With this royal favour came greater investment, as more and more stone buildings were erected in the Parthian style; graceful and tall with a fondness of grand archways. Ctesiphon's prominence continued to grow during this era, helped by its close association to Seleucia, and it soon began sharing in the stream of commerce that flowed in through the Persian Gulf.

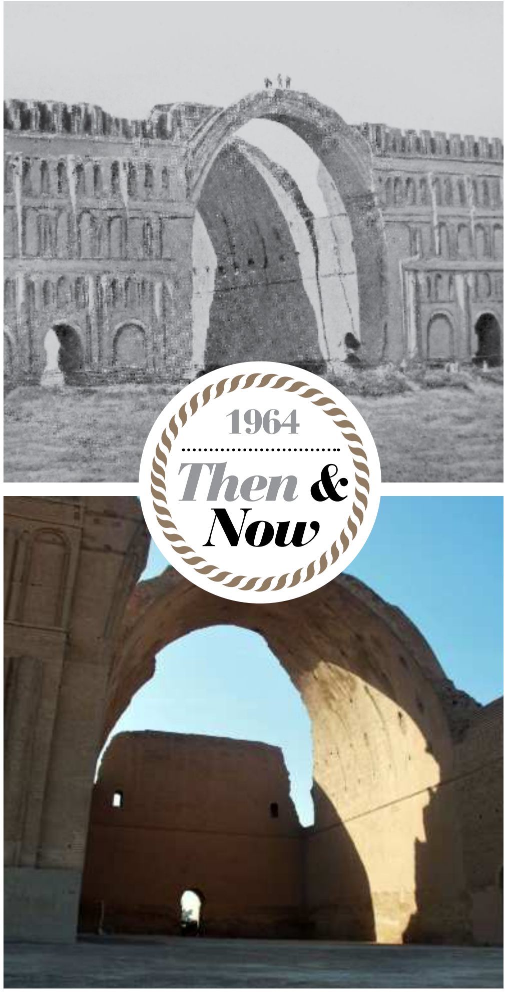
By the time the Parthian empire fell in 224 CE, Ctesiphon remained a key stronghold in the region, and as such it was coveted greatly by the Romans who carved a path of dominion into the region. It was besieged and conquered numerous times by Rome in the decades that followed, with thousands of its inhabitants captured and sold into slavery. As the Parthian line faded, the city would rebuild itself from the ashes of Roman incursion and pass into the hands of the Sasanian Empire.

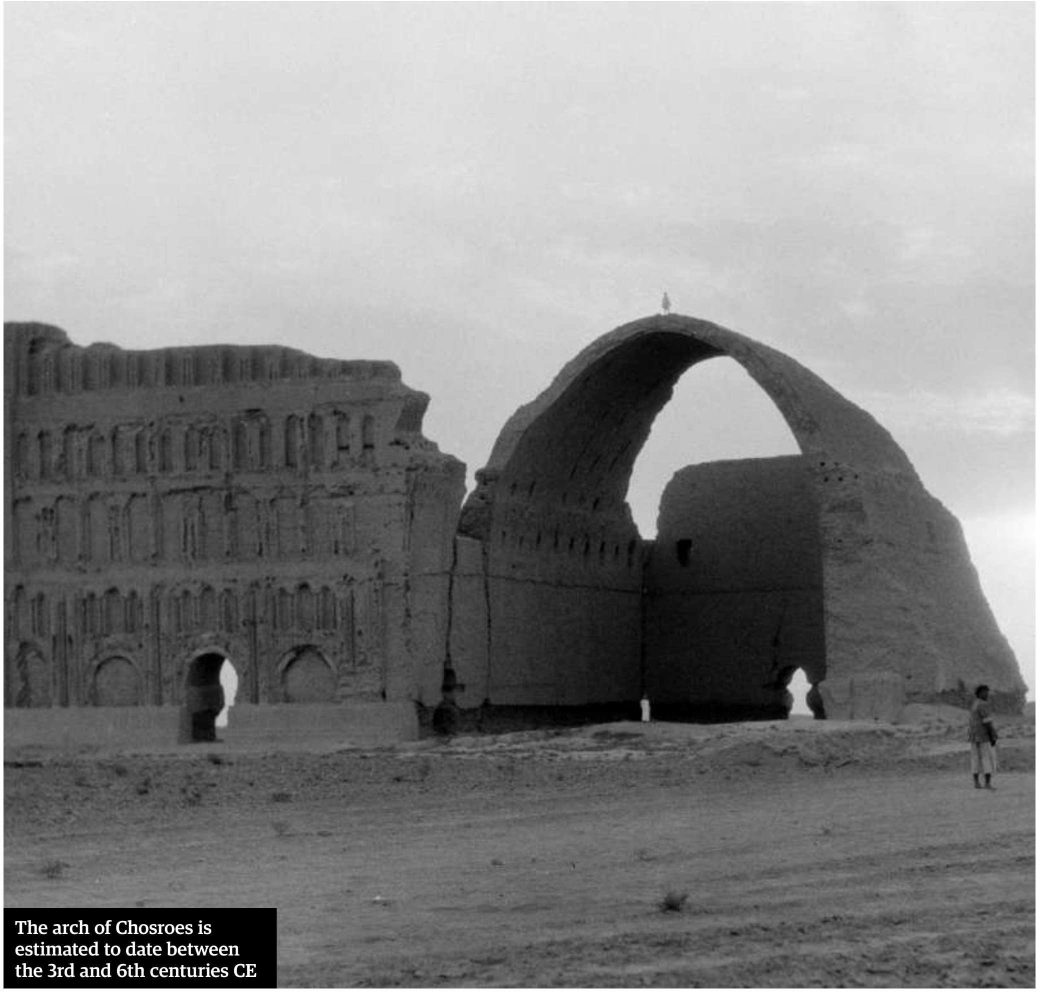
Ctesphion's star ascended even further under Sasanian rule, and it was lavishly rebuilt and vastly expanded. It was made the capital of the empire and served as a royal palace (once again favoured as a winter residence), an administrative centre and commercial hub in the region. Its rich cultural diversity (including Jews, Christians, Arabs and Syrians to name but a few) drove trade and wealth into the city limits, while its network of waterways and verdant soil enabled the Ctesiphon to support itself indefinitely.

While the Parthians ultimately added very little of their own culture to the design and architecture of the city, the Sasanians had no such problem. Prior to the widespread use of concrete, mud brick was the chosen resource for erecting buildings of worth. So when the Arch of Ctesiphon was built towards the end of the Sasanian Empire during the 6th century, the arch was constructed entirely out of these oven-baked bricks. And while the Sasanians were Iranian by descent, their building techniques were still very much influenced by the designs and practices of Mesopotamian engineers.

Those techniques enabled the builders to create a huge archway without the need to rely on precarious scaffolding. Leading to a huge 30-metre-high and some 43-metre-long audience hall, the Taq Kasra was constructed by using an ingenious angled brickwork concept. This enabled these ancient engineers to erect each course against its predecessor with only a simple wooden tower used to give the builders access to the incredible heights to which they built. To complete this iconic structure, the Sasanians used façades decorated with blank arcading and pilasters to flank it. It created an awe-inspiring sight, one fit for royal residence – and it's just as captivating now despite its ruined state.

As the Sasanian period continued, Ctesiphon started to evolve into more than a mere city, but rather a collection of them on both sides of the Tigris. To many, it was now thought of as 'The Cities' (*al-Mada'in* in Arabic and *Mahoze* in Aramaic). It was a sprawling metropolis so expansive that its many sides became vastly different in look, feel and purpose. The western side was known as 'Veh-Ardashir' and was home to some of the cities' wealthiest denizens including both Jews and




The arch of Chosroes is estimated to date between the 3rd and 6th centuries CE

Christians (a cathedral was even erected in the city). The eastern side was one of the oldest sections of Ctesiphon, and played host to the 'White Palace' – the Sasanian royal residence.

Following years of conflict with the Muslim Arabs (and a number of attempts to occupy and hold the city by the Romans), the Sasanian Empire began to decline. Despite successfully defeating the Emperor Julian and his Roman forces in the Battle of Ctesiphon (363 CE), Ctesiphon and its masters were no longer the great force of trade and power they once were. Its military exhausted and its allies dwindling, the grand cityscape of Ctesiphon soon followed. For three years, Sasanian territories had been under constant attack, and at the Battle of al-Qādisiyyah in 636 CE, the Muslim forces would rout their foes outright.

By the time the Muslim Arabs reached Ctesiphon in 637 CE, they found the city mostly deserted, the royal family having fled their long-standing home. Now under Muslim rule, the city began to rescind in prominence in the region, a process that only increased in severity when the Abbasid Caliphate established its capital in the nearby city of Baghdad during the 8th century. In fact, it would be the stones taken from the now dilapidated ruins of Ctesiphon that would help build Iraq's long-standing capital.

With Baghdad now flourishing, Ctesiphon eventually drifted from memory, its trade routes and inhabitants having long moved to pastures new. The site remained effectively abandoned for centuries, until around 1915 when the site played host to a brutal showdown between the Ottoman Empire and Britain during World War I. The British were attempting to take Baghdad, but were ultimately driven back into Ctesiphon where they were forced to surrender.

In 1928, the site was officially 'rediscovered' by German archaeologists, with a team of Italian researchers setting foot on the site in the 1970s in order to continue to record its seemingly lost history. By 2013, a number of key locations on the site – including the Arch of Ctesiphon – were crumbling due to heavy rainfall. The Iraq government has now begun restoring the site, turning it into the country's most lucrative and popular tourist destination.

> "Ctesiphon and its masters were no longer the great force of trade and power"

It was under the rule of Mithridates I of Parthia – seen here in a relief at Izeh – that Ctesiphon was first established

Ctesiphon's religious history

Ctesiphon's cultural and religious identity fundamentally evolved with both a change in masters and the greater prominence it gained (and eventually lost) as a result. It was a precedent set by the Parthian Empire. A society heterogeneous in nature, the city that became Ctesiphon absorbed this multifaceted cultural DNA, and as such, it played host to many gods and goddesses in the first centuries of its existence.

Its most prominent followings were centred around Iranian teachings such as Zoroastrianism and the worship of Greek gods, although Christianity also formed a sizeable presence in the early years. Judaism was also practised throughout a majority of Ctesiphon's history (prior to the Muslim occupation in the 6th century), and recent evidence suggests even Buddhism gained a foothold here.

As the city passed into the control of the Sassanid Empire, it flourished thanks to a greater investment from its masters, its instatement as the capital and the new trade routes established as a result. With these new avenues came new cultural influences, but it wouldn't take long for the Sasanids to establish Zoroastrianism as the official religion of the kingdom. Manichaeism was also established during the height of the Sasanid Empire, a popular religious movement that built itself around a cosmological war between good (the spirit realm) and evil (the material world).

Ctesiphon would be captured and held many times by the Roman Empire but it was with the arrival of the Abbasid Caliphate in 637 CE that it became a Muslim stronghold. Mosques were established, but Ctesiphon would eventually be abandoned, as Baghdad – the country's new capital – became the beating heart of the region.

Parthian votive relief from Khūzestān Province, Iran, 2nd century CE

© Alamy, Library of Congress's Prints and Photographs division, Pentocelo, PHGCOM

TIKAL

Not only is this one of the world's most important Maya sites, it is also situated in the heart of a jungle noted for its rich biodiversity

GUATEMALA
TIKAL

Deep in the Guatemalan rainforest lie the ruins of a magnificent Maya city; a pre-Columbian site of commercial, cultural and ceremonial significance that was once home to possibly 90,000 people, yet was abruptly abandoned in 900 CE. Situated in Petén province around 300km north of Guatemala City, Tikal - known to the Maya as Yax Mutal - evolved over centuries from a simple village into a sophisticated centre; one that showcased the technological, artistic and intellectual achievements of Maya society. Many suggest that the area was first settled at least as early as 600 BCE, as there is evidence of agricultural activity at that time. It became an important regional hub and has a great lineage - construction of pyramids and other structures had already begun by c.350 BCE.

The site had some geographical limitations - there was no natural running water supply for instance, so rainwater was collected in specially constructed reservoirs. Different building phases resulted in a vast city of temple pyramids, palaces, ceremonial platforms, administrative buildings, monuments, residences and even some recreational ball courts where the locals could play the Mesoamerican ballgame - a sometimes-violent game in which a hard rubber ball was struck with the hip. Much of the terrain was swampy, so important hubs were linked by ramps and paved causeways. Structures were made from local limestone and were often decorated with stucco and bas-relief carvings. The Maya used wood, typically from the native sapodilla tree, to make lintels for temple doorways, embellishing them with elaborate carvings. One depicts a woman of high status wearing a woven dress, a feathered headdress and jade jewellery.

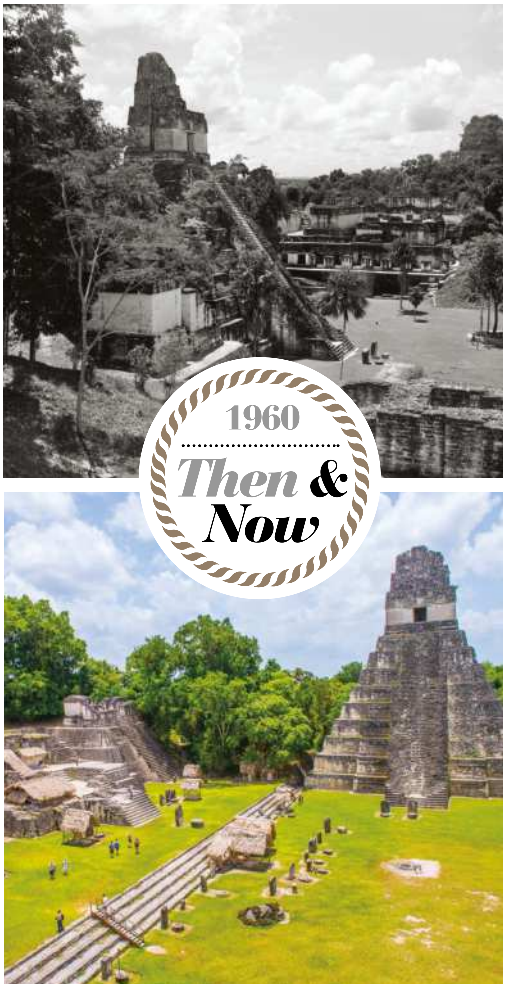
The city has an immensely complex history. It grew prosperous as a trading centre, the inhabitants exploiting the natural resources of the surroundings and also clearing suitable land in order to grow crops such as maize. Its fortunes waxed and waned over the centuries, reaching its artistic and cultural peak between 600-900 CE. There were frequent conflicts with neighbouring states. In 378 CE it came under the control of mighty Teotihuacan in the Valley of Mexico, around 1,000km away. Although some think the two merely had close diplomatic and trading ties, carvings on a stone column or 'stela' suggest that Tikal was invaded, the king executed and a ruler from Teotihuacan installed in his place. There was a consequent influence on the city's art, architecture and even dress.

Tikal was not crushed though – in fact, its sphere of influence expanded and it soon conquered smaller neighbours. Teotihuacan became an important trading partner. However, in the mid 6th century there was further conflict; Tikal was defeated by an alliance of its two great rivals, Calakmul and Caracol, and it lost its regional dominance. Gradual decline appeared inevitable, but in 682 CE a new ruler, Jasaw Chan K'awiil II (682-734 CE), took the throne, and the city's fortunes dramatically revived. He was one of the most important of all Tikal's rulers, defeating Calakmul and making his mark upon the city by initiating a substantial rebuilding programme. When he died, he was entombed in one of the most impressive structures visible today, a mighty temple pyramid. Known now as Temple I, it was originally topped with a decorative 'roof-comb', a common feature on Maya monuments, which in this case was embellished with a sculpture of the king. His tomb, discovered in 1962, contained jade and shell ornaments as well as pots with offerings of food and drink. There was also a large number of bones incised with extraordinarily delicate and detailed images. One, for example, showed a standing captive with bound wrists and knees; another depicted the Maize God being paddled in a canoe, together with a supernatural parrot, a dog, a spider monkey and an iguana. At its peak, Tikal must have presented an awe-inspiring sight. Generations of rulers built, rebuilt, expanded and improved it, resulting in a sprawling city (around 3,000 structures have been noted) with a monumental urban core. This was studded with pyramids that soared towards the sun; stone skyscrapers in the jungle, one reaching the extraordinary height of 70m. At its heart was a Great Plaza, which was bordered by two vast temple pyramids and two complexes, the North Acropolis and Central Acropolis. Construction at the North Acropolis, a royal burial site, dates back to 350 BCE. It grew in size over the centuries as pyramids were erected, along with numerous altars and stelae. Excavations revealed tombs filled with grave goods, including ceramic vessels, jade jewellery, shells, beads and even a musical instrument made from turtle shells. Archaeologists also found the remains of human sacrificial victims.

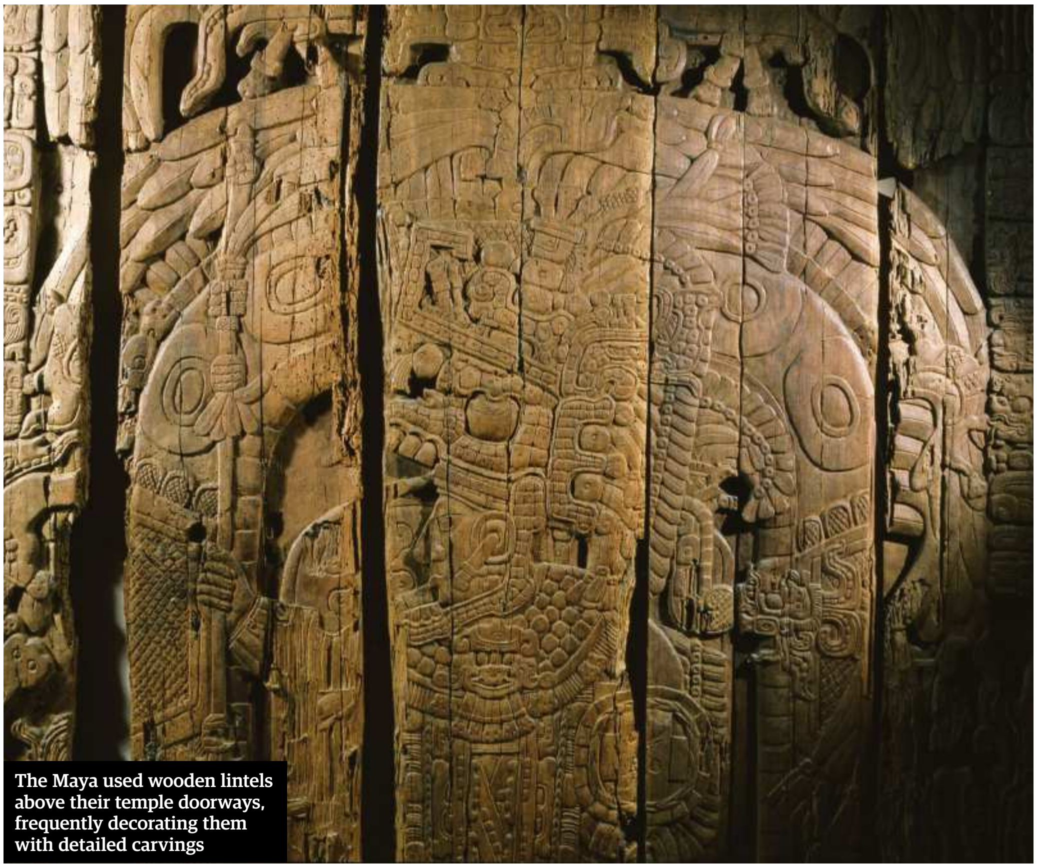
Other building hubs include the Lost World Complex, at the heart of which is the Lost World Pyramid – a stepped structure that eventually reached a height of 31m. It is the oldest in Tikal. To its east is a platform topped with three small temples. Together they formed an ancient observatory; a stairway on the main pyramid provided an observation point, while the temples were placed to align with the sunrise at the equinoxes and solstices. The complex was also used for elite burials. Then there is the Plaza

Tikal was a city of skyscrapers, with pyramid temples that reached up to 70m into the air of the Seven Temples – a complex that, as well as the eponymous temples, contained a large administrative building and an unusual triple ball court. Maya cities gradually declined during the 8th century CE, and Tikal was no exception; building slowed, the population moved in from the outskirts and became concentrated in the central zone, and agriculture intensified – to the extent that the land and its resources were overexploited. By around 900 CE it was effectively abandoned and reclaimed by the jungle. It was not until the 17th century, when accounts of its existence began to appear in print, that the western world became aware of this lost city. In 1848, two local officials accompanied by an artist visited the site and produced an illustrated account of their findings. They were soon followed by other explorers and archaeologists. However, Tikal was so remote that it was not until 1956 that investigations were carried out on a large scale and the site was mapped and excavated in depth.

Today the ruins of this once-mighty city are surrounded by forest of such exceptional biodiversity that they form part of the Tikal National Park, a UNESCO World Heritage Site covering 57,600 hectares. There are wetlands, savannah, tropical broadleaf and palm forests, and the land is home to orchids, bats, monkeys, anteaters and hundreds of different species of bird as well as five species of cat – the jaguarundi, margay, ocelot, puma and, most powerful of all, the jaguar. This ancient Maya city may have been lost for centuries, but it has certainly not lost its magic.



> "Tikal was so remote that it was not until 1956 that investigations were carried out on a large scale and the site mapped and excavated in depth"



The Maya used wooden lintels above their temple doorways, frequently decorating them with detailed carvings

The desertion of Tikal

The abandonment of Tikal is something of an archaeological mystery. It, along with other Maya cities in the southern lowlands of Mesoamerica, declined rapidly during the 8th and 9th centuries. Their populations eventually collapsed completely, leaving once-thriving centres to be reclaimed by the jungle for no apparent reason. Theories to explain this phenomenon range from military invasions, loss of trade and even disease epidemics, to climactic change and ecological disaster. In the case of Tikal, it is thought that a combination of factors might have been responsible. Overpopulation certainly seems to have been an issue, as people moved into the central zone to escape conflicts in the surrounding area. This concentration of people would have led the Maya to adopt a more intensive system of agriculture, causing deforestation, exhaustion of the fragile soils and erosion. Agrarian failure and ecological crisis would then have forced the inhabitants to abandon the city. However, there is an increasingly strong body of evidence to suggest that climate change, in the form of extreme drought, was the root cause of Tikal's ruin. Even mild droughts would have had an impact, as the city had no running water supply and was reliant on rainwater to meet its needs. More severe water shortages would have had serious consequences. There is still much more work to do, and the scholarly arguments are sure to continue for many years to come.

© Getty Images

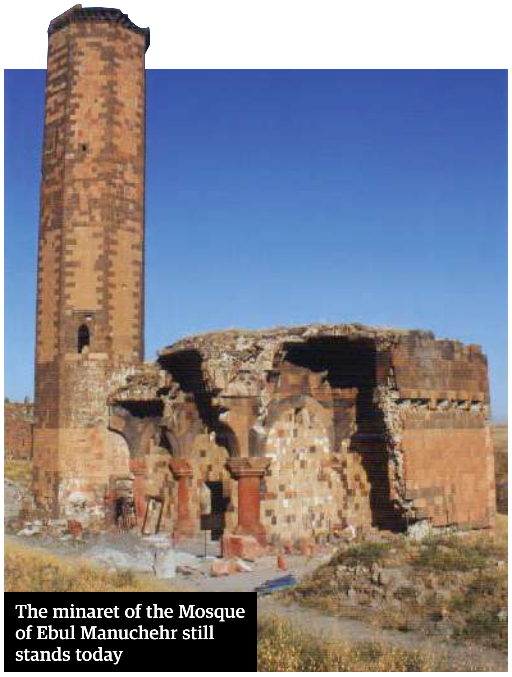
ANI

Once the capital of a kingdom, Ani was known as the City of 1,001 Churches. Today, only a ghost town remains within crumbling walls

On the border between Turkey and Armenia lie the ruins of a city that was once the capital of a mighty nation. Today its bustling streets are silent and lost, laid waste by invasion and time, its magnificent churches and citadel reduced to rubble. This is Ani, the 'City of 1,001 Churches'.

In the 11th century, the greatest dynasty in Armenia were the Bagratuni, ruled by Ashot III, the Merciful. In 961 CE he purchased Ani from the Kamsarakan dynasty, with whom the Bagratuni had long vied for power, and named this new acquisition as the capital of his extensive realm. At first, Ani was only a fortress, which had been established since the 5th century, and a modest town clustered around the hill on which it was situated. However, Ashot recognised the strategic importance of his newest acquisition, which commanded views of the surrounding lands and river. The trade routes of the Silk Road close by – reaching the continent in all directions, leading into into the Byzantine Empire, Asia, Persia and the further reaches of the east – played a vital role in establishing Ani as a major commercial hub.

The city grew at an incredible rate. It was a place of rich pickings and opportunities, where the streets rang with the cries of merchants passing between nations great and small. Built as a royal capital, Ani stood between Christian and Muslim lands and was a melting pot of cultures and nationalities. It also appeared to be impregnable. Standing on a triangular mountain plateau, naturally formed where two canyons met, Ani was notoriously difficult to access. The only ways in were the city gates, and with all points



The minaret of the Mosque of Ebul Manuchehr still stands today

of the compass other than the north occupied by deep canyons, the options for potential invaders were limited. To further improve the security of important buildings, they were built along the edges of the canyons, with the city protected by walls of near 50 feet in height, protected by more than two dozen defensive towers.

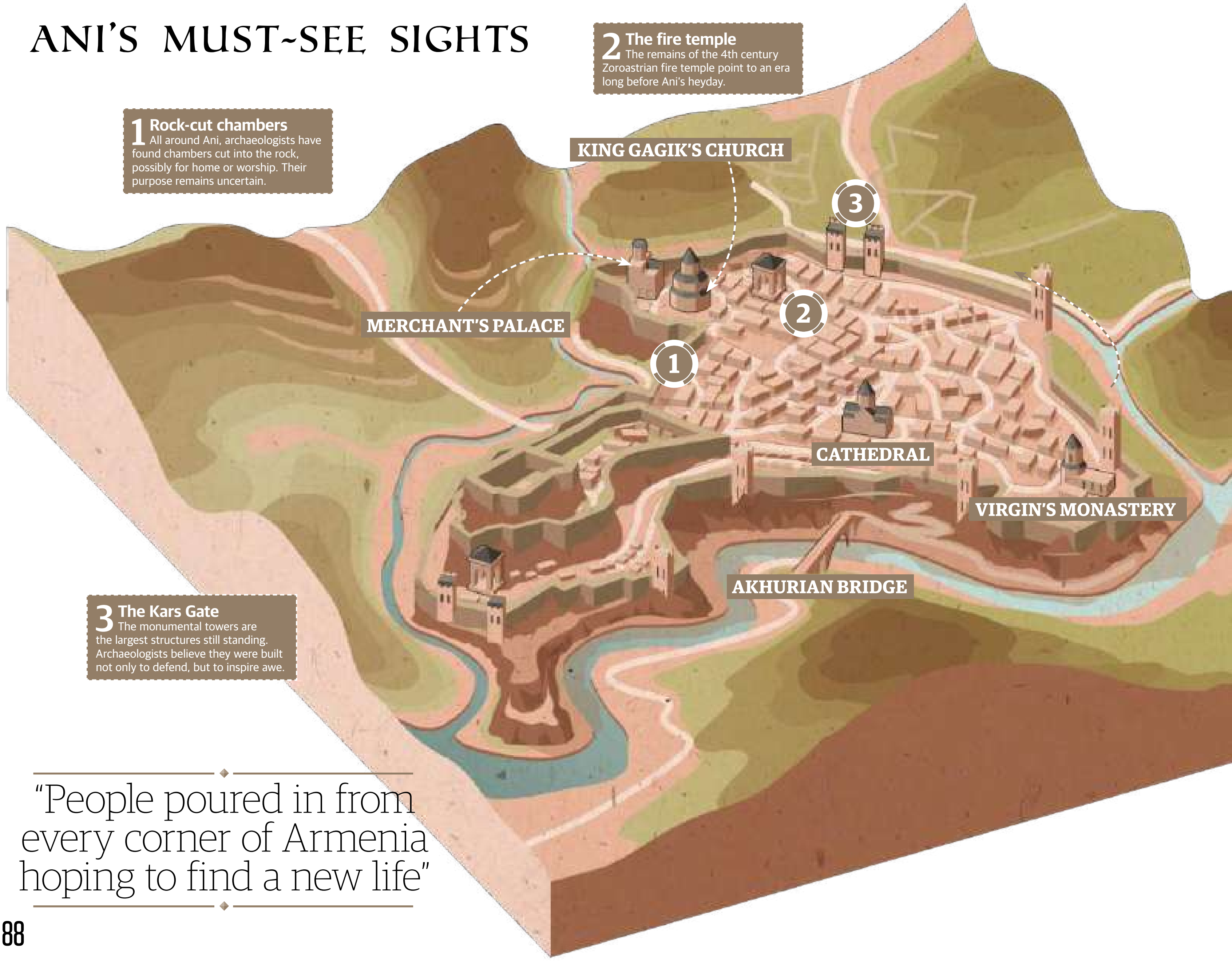
Ani wasn't just a textbook example of defensive structures, but a place that was intended to inspire awe, as recorded by European travellers to the region. Monument walls and those of the city itself were constructed of tuff stone, a rock that was also favoured by the Romans. Tuff stone takes on a variety of colours and with an assortment of hues including orange, black and different shades of red, brown and grey, the whole city resembled a vast mosaic. Enormous crosses were picked out in different coloured stone in the walls of buildings, and the numerous places of worship were decorated with ornate carvings.

It was a city of stone, with no wood or metal used at all in its construction. The infrastructure was the height of Medieval achievement too, with drainage, fresh water and even streetlighting all paid for via taxes charged to the merchants who enjoyed lucrative business in the city.

Though the bustling streets weren't exactly paved with gold, the city must have been a magnificent sight, a colourful patchwork standing at the pinnacle of the plateau against a mountainous backdrop. People poured in from every corner of Armenia, hoping to find a new life in the capital city, and it became a vibrant centre of trade and

> The structures at Ani are constructed using the local volcanic basalt, a sort of tufa stone

ANI'S MUST-SEE SIGHTS



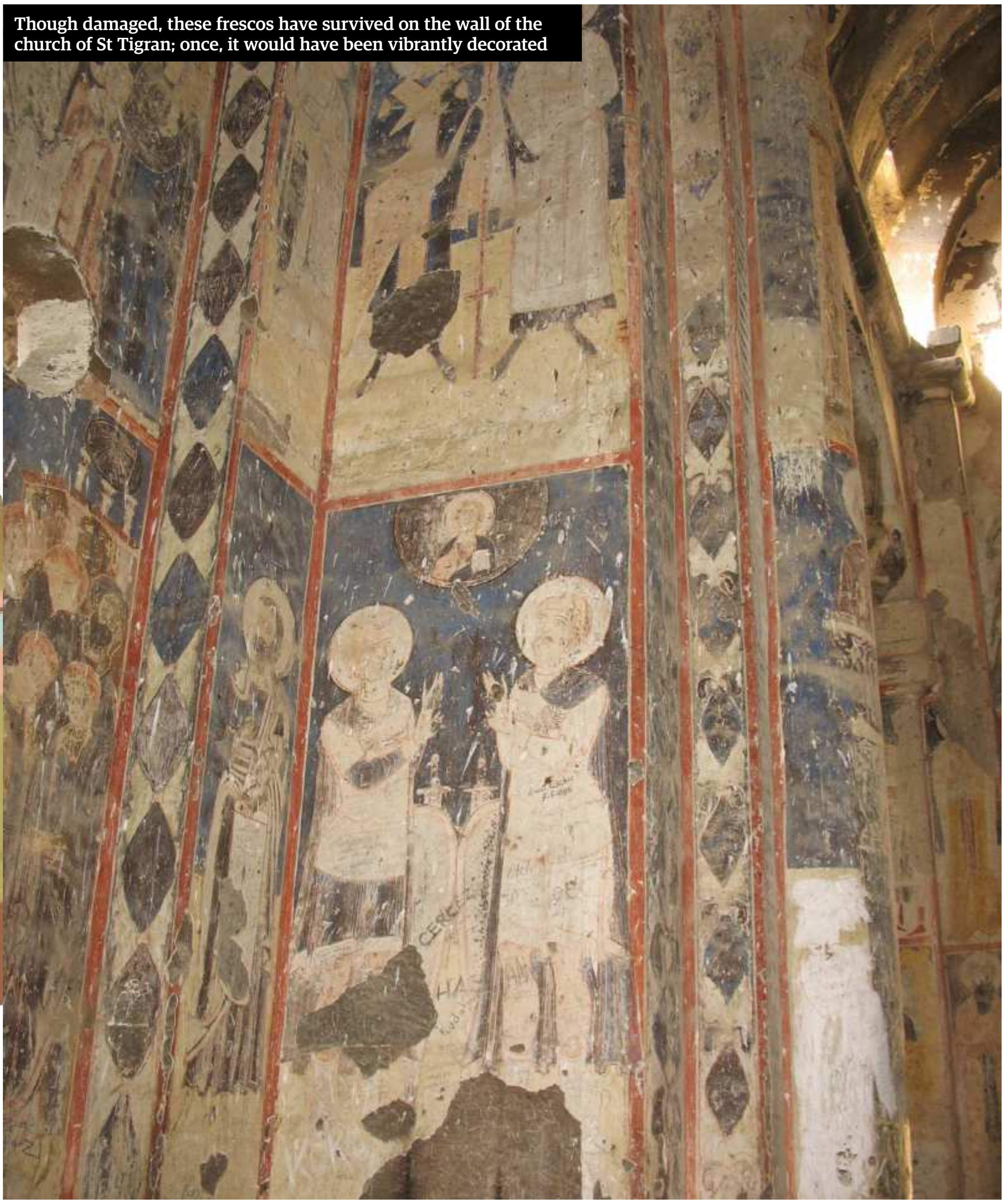
2 The fire temple
The remains of the 4th century Zoroastrian fire temple point to an era long before Ani's heyday.

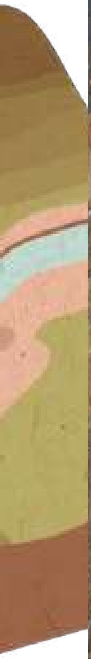
1 Rock-cut chambers
All around Ani, archaeologists have found chambers cut into the rock, possibly for home or worship. Their purpose remains uncertain.

3 The Kars Gate
The monumental towers are the largest structures still standing. Archaeologists believe they were built not only to defend, but to inspire awe.

> "People poured in from every corner of Armenia hoping to find a new life"

The mosque offers incredible views of the surrounding landscape

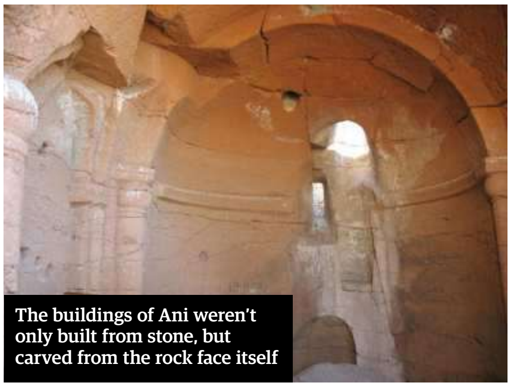

Though damaged, these frescos have survived on the wall of the church of St Tigran; once, it would have been vibrantly decorated



Damaged by its protectors

By the turn of the millennium, the once-breathtaking city of Ani had succumbed to a rather more humble fate, becoming a a favourite site for locals to graze their cattle. As part of its commitment to protect the site, the Turkish government misguidedly erected a fence to ensure that no unauthorised visitors could gain access to the site. In 2002, they completed the installation of a three-metre-tall fence of wire mesh that was topped with barbed wire, held in place by concrete posts that had their foundations deep in the earth. Sadly, the fence did far more damage than the grazing animals that it was intended to keep out. In order to completely encircle the site, it was necessary to lay down a new road, and construction vehicles rattled through the city day in, day out, flattening the land in their path. To make sure that the posts were secure, deep foundations were drilled down and filled with concrete, with no thought for the damage being wrought to the by-now delicate ruins. Ani is no stranger to fences though, and situated as it is on the still-controversial Armenian-Turkish border, visitors can stand on the edge of the city and look out at the guard towers that were once symbols of the Cold War. Today, Armenian border guards patrol there rather than their Russian counterparts, but it's a sobering reminder that even centuries later, the territory around Ani is still contested.

Ironically, although the cattle that once grazed Ani were now unable to enter, it was soon discovered that they were doing far more good than harm. Without them to keep the vegetation down, it has overgrown and swamped many of the small ruins and foundations. Now what remains in the city is at risk of being overwhelmed and destroyed by nature itself.


The buildings of Ani weren't only built from stone, but carved from the rock face itself

Why was Ani abandoned?

The big one

A popular theory regarding the abandonment of Ani is that it was virtually wiped out by an earthquake in 1319, causing the survivors to flee their homes. Though there was a quake, it didn't empty the city.

Changing trade routes

With seemingly constant invasions and siege, the rich traders and merchants of the east didn't fancy risking their lives in Ani. Their influence saw the roads gradually move away from the city, robbing it of its economic clout.

Civil war

Sitting on the border of both Turkey and Armenia, Ani was the first port of call for nomadic groups looking to pillage. After decades of watching their backs, the people eventually had enough.

Hripsime Monestry in the ancient city of Ani

> "Troops met unexpected fierce resistance from a populace who loved their city"

government. Inevitably, the Armenian Catholic Church made its headquarters in Ani, and by the 11th century, hundreds of members of the clergy could be found among a population that now numbered over 100,000.

Ani fell out of the hands of its founding family in 1041, when its ruler, Hovhannes-Sembat, bequeathed his dominions to the Byzantine Empire. When he died and the people baulked at being taken into the empire, Byzantine emperor Michael IV sent an army in to make his point. The troops met unexpected fierce resistance from a populace who loved their city, yet they were outnumbered. The Byzantine Empire besieged Ani, killing thousands before the city surrendered in 1045. Yet Ani didn't stay in the empire for long, and little more than 25 years after its surrender to Michael IV, Ani was captured by the Turkish Seljuk. The invasion was brutal and the city was pillaged, its inhabitants slain or taken prisoner.

From that moment, Ani's future became uncertain. Its was passed from ruler to ruler, kingdom to kingdom, until it returned to prosperity under the rule of Georgia's Queen Tamar.

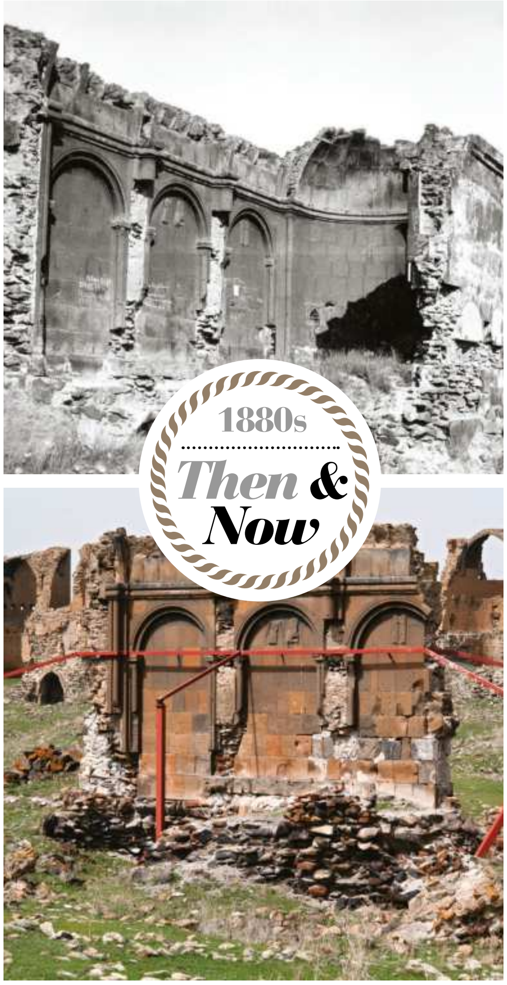
Unfortunately, this new prosperity and its strategic importance made Ani a tempting prospect for raiding parties, and when the Mongol invasions began in 1237, the beleaguered, occasionally butchered, population packed up and began to move on, leaving their great city behind. A mighty earthquake shook the city to its foundations in 1319, and its Mongol rulers did nothing to repair the damage, beginning Ani's architectural decline. With nothing left in Ani but its proud history and the crumbling remains of once-magnificent architecture, the exodus began.

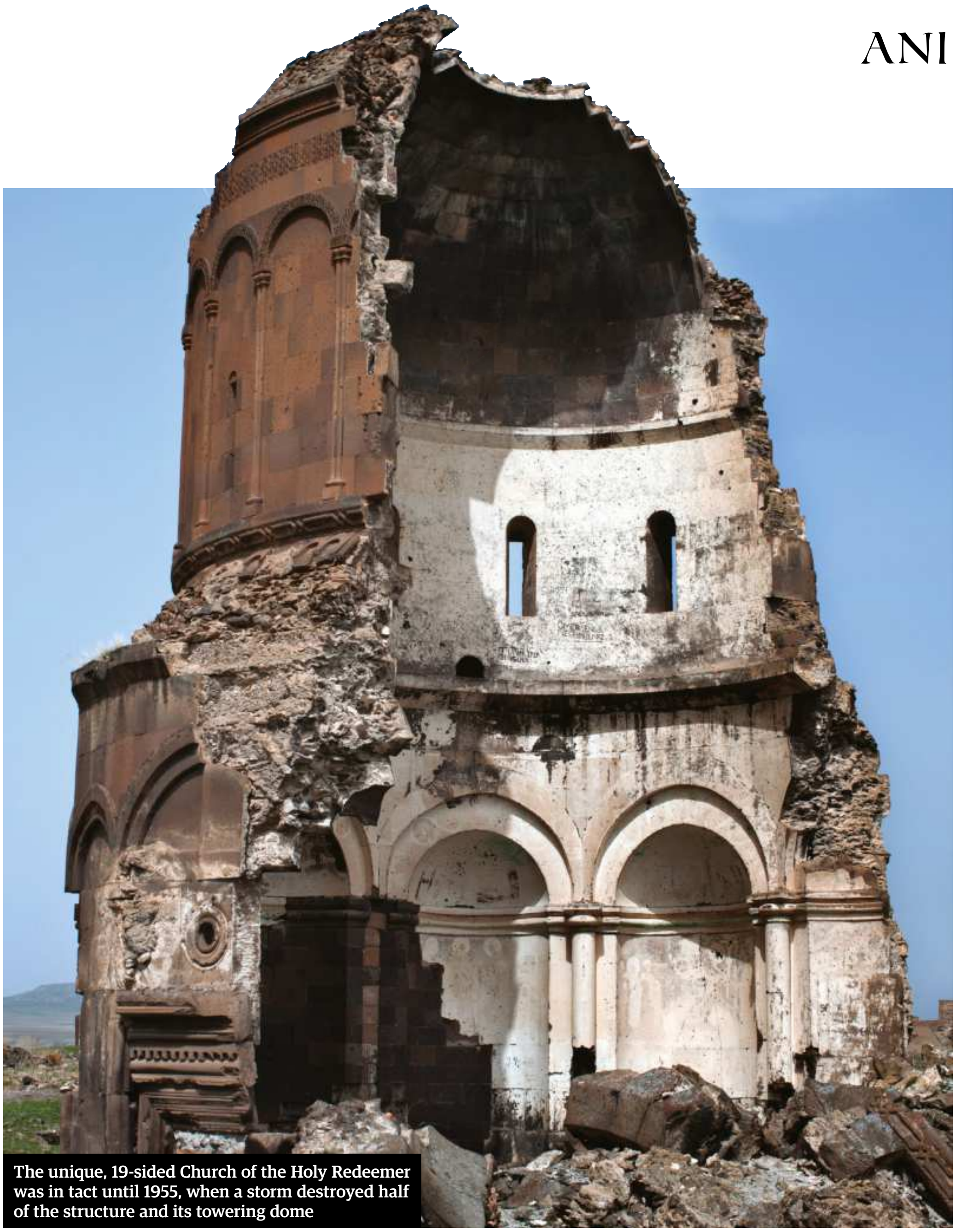
The slow desertion of Ani grew faster as the Silk Road fell out of use, and by the time the city became part of the Ottoman empire in 1579, it was nothing but a humble town. For those few who remained, life had become perilous thanks to the spread of warring Kurdish tribes who threatened the region.

The last inhabitants of Ani were the monks of Kizkale, who finally departed in 1735.

For decades Ani fell silent, its once-celebrated churches sliding into disrepair. In its exposed position, the elements wreaked havoc on the city. Forgotten and isolated, it crumbled away, as around its historic walls, the Kurds fought on. That changed in 1878 when the Kars region of the Ottoman Empire, in which Ani was situated, was absorbed into the Russian Empire, and Armenians could once again venture into the ruined city. What they knew of Ani they had learned in history books. It was a place of legend, and now they could see it with new eyes, and its unhappy fate became a symbol of their own decimated land. Once rich and verdant, it was ruined and barren, a place where past glories had been ground into dust.

In 1892, Russian archaeologist Nikolai Marr, with the support of the St Petersburg Academy of




The unique, 19-sided Church of the Holy Redeemer was in tact until 1955, when a storm destroyed half of the structure and its towering dome

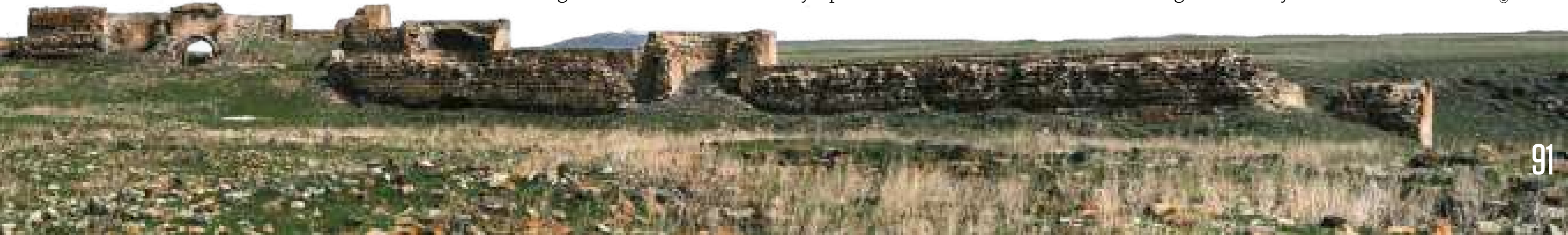
Scientists, began to excavate the city. His team were the first to unlock the potential of the site, slowly and painstakingly unearthing and beginning to restore what remained of the city, including the faded frescoes that once decorated the churches. His efforts ended in 1917 when the Ottoman army marched across Armenia, laying waste to its population and lands. Marr tried to save as many artefacts as he could, but many were left behind to face Turkish soldiers who had been ordered to destroy every remaining stone in Ani. Thanks to their monumental size, the order was not carried out, though most of Marr's excavations were demolished. Trapped between the Soviet-occupied Armenian Republic and Turkey, Ani was caught in the literal crossfire. Nobody could enter the region and nobody, Marr included, could do anything to save the remains of the city. When the short-lived Republic of Armenia was divided between the Soviet Empire and the Republic of Turkey, Ani was at the very edge of the Turkish side of the border, its ancient walls running parallel to the fences and watchtowers of the Iron Curtain.

With no wish to acknowledge this historically important Armenian site, Turkey left Ani to its tragic fate. Hit by storms and earthquakes, the buildings that had survived through the centuries now collapsed. Three churches, the Church of the Shepherd, the Georgian Church and the Church of the Child Princes, were destroyed by earthquakes in the 1960s, while another devastating earthquake in 1988 brought down part of the city wall and much of the cathedral. If that wasn't enough, military manoeuvres in Ani – including explosive testing and target practice – caused irreparable damage to the remains, while trespassers have daubed graffiti on the walls. In keeping with the Turkish Empire's dismissal of the Armenian site, state-approved vandalism has been rife. Whitewash was crudely splashed onto the churches to hide Armenian inscriptions, while those that were badly damaged were not restored or preserved, but simply stripped off altogether.

It wasn't until the early 2000s that the Turkish government became more sympathetic to Ani's heritage. The Ministry of Culture stopped looting and even attempted to restore some parts of the city. Unfortunately, in many cases, their good intentions caused further damage, as ruined walls were rebuilt with modern stones that matched in neither colour nor style. They also put a halt on blasting at a nearby quarry that was shaking the foundations of the city in an effort to slow the already advanced deterioration.

Thankfully, the future for Ani looks a little more positive than its past. Recognised by the Turkish government as a site of great historical importance, it has been named by the Global Heritage Fund as one of 12 sites at the most risk of irreparable destruction. It was added to the list of UNESCO World Heritage Sites in 2016, which hopefully means that Ani will now receive the care and attention that it needs, if not to restore it to its former glories then to preserve and excavate its remains for the generations yet to come.

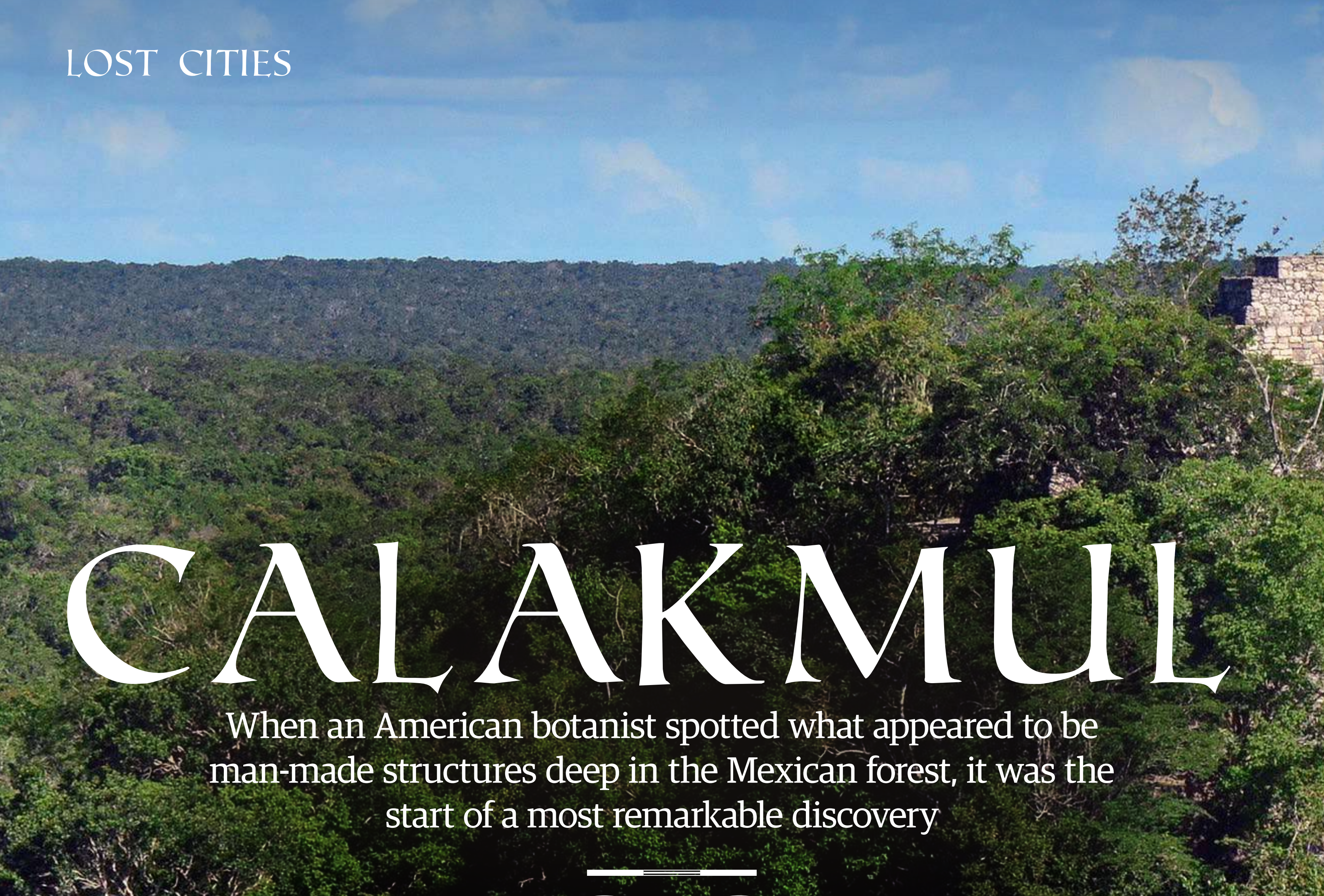
© Acarvin, Ego, Getty Images, Thinkstock, Ed Crooks



Church of St Gregory of the Abughamrents

After being sacked by the Mongols and experiencing an earthquake, Ani was abandoned and forgotten. Once called the City of 1001 Churches, only a couple of them remain but lie in ruin. This one was a private chapel for the Pahlavuni family.

© Getty Images



CALAKMUL

When an American botanist spotted what appeared to be man-made structures deep in the Mexican forest, it was the start of a most remarkable discovery

MEXICO
CALAKMUL

When Cyrus L Lundell glanced from the window of his aeroplane in 1931 as he passed over the lowlands in Campeche, he was stunned to see a vast Maya ruin laid out beneath him. It was he who named it Calakmul, 'City of the Two Adjacent Pyramids', and it was a city with a rich history.

Though Calakmul is believed to date back to the Preclassic Maya period, its origins are sadly lost to time. Who exactly built it, and why they built it, remain a mystery, though there can be no doubt from the city's sheer scale that it was constructed to demonstrate success, wealth and power. At its height, Calakmul was vast, with 50,000 citizens housed over 20 square kilometres and served by a complex system of waterworks and buildings, while among the 6,750 structures catalogued at the site is one of the tallest Maya pyramids ever discovered. There can be no doubt that this was intended to be a centre of civilisation, and as the decades passed, the new inhabitants simply built up higher and higher until the city towered above the canopy.

What little is known of the early history of Calakmul has been mostly assembled from references found at other sites, and the first comes in 529, when hieroglyphic texts suggest that Calakmul was the centre of the Kaan dynasty, or the Snake Kingdom. The kingdom got its name thanks to the snake symbol that was carved on glyphs displayed at cities that were part of the kingdom's domain.

Under the stewardship of the Kaans, Calakmul became a powerful administrative centre, exercising control over its surrounding lands and

© PashiX

towns. Today, many of those tributaries can still be seen from the higher points of the city, giving a distinct impression of the way the centre of the kingdom once overlooked those whom it controlled.

The city itself was laid out in a manner intended to invoke awe as visitors entered. Passing through agricultural land, they would then find themselves in the residential area. As they drew closer to the governmental heart of the city, the architecture and delicate limestone structures grew more elaborate, with plateaus topped by stone pyramids and immense carved stone staircases ushering visitors into the centre of the city. At its heart was an immense pyramid of almost 50 metres, which dominated the landscape for miles.

Residents were well-served by a network of canals and reservoirs that fed water to even the most outlying areas, while stone paths created streets and walkways by which to navigate the city. Life here was advanced, and people enjoyed the best of Maya modern living, achieving a level of sophistication that might seem surprising to modern visitors.

Calakmul wasn't the only Maya superpower in Campeche though, and for decades it was locked in an ongoing power struggle with its equally strong neighbour, Tikal. In 562, this exploded into violence when Tikal's ruler, Wak Chan K'awiil, made an ill-fated attempt to invade his neighbour. The attempt failed, and Calakmul's king, Sky Witness, had his adversary sacrificed before claiming Tikal for the Snake Kingdom.

Sky Witness, however, could not live forever, and following his death, the rulers came thick and fast. The expansion of the city and its powers continued apace as pretenders to its throne were defeated and dispatched, their wealth added to that of the ever-glittering Calakmul. Opponents weren't chosen at random either, but for the access to trade routes that they commanded, for Calakmul was a centre of commerce in addition to government.

Calakmul is particularly interesting, though, because it didn't only defeat and plunder its enemies – its rulers knew the power of a strong alliance, too. In fact, many of its strongest ties came not via conflict, but diplomacy, and it sat at the heart of a web of alliances that commanded the region. Let there be no doubt, however, that the rulers of Calakmul had any hesitation when it came to conquest, as the sacrificed king of Naranjo would be quick to testify!

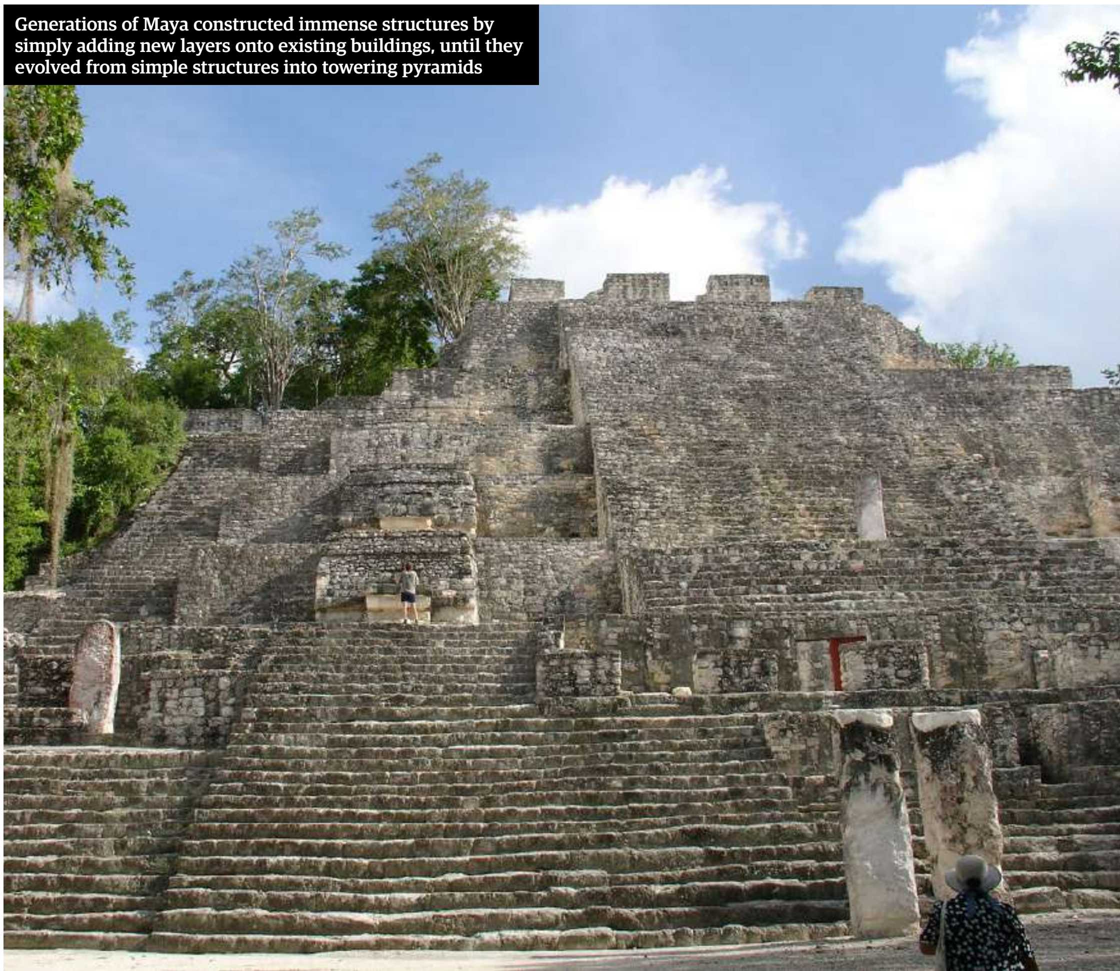
The monumental scale of the city is believed to owe its existence to King Yuknoom Che'en II, known as Yuknoom the Great, who came to the throne in 636. Just over a decade later, Tikal attempted to subdue its neighbour again, and once again was defeated. But this time, Yuknoom Che'en didn't sacrifice the recalcitrant monarch, B'alaj Chan K'awiil, but allowed him to continue ruling as a puppet of Calakmul. It was one of the king's more shrewd moves, and it ensured that this always-sabre-rattling neighbour on the doorstep kept in line. He also presided over dynastic marriages and alliances, and after 50 years on the throne, when Yuknoom Che'en died, Calakmul's importance could not be overstated.

Yet, as with all things, even the strongest city could fall. Just as its early history is lost, so too is the later fate of Calakmul. Experts agree that something happened, but exactly what that was, they cannot be sure. However, by 693, paintings exist that show envoys from Calakmul kneeling before the throne of Tikal, and just two years later, the territories were once again at war. The respective kings of Calakmul and Tikal clashed in an almighty conflict, and for Calakmul, the outcome was disastrous. The once all-powerful overlord was defeated, and as the years passed, the influence of Calakmul began to decline at a rapid rate. By 724, it

> "Just as its early history is lost, so too is the fate of Calakmul"

This remarkably well-preserved Maya plate is made from terracotta, and is one of many that have been found in the ruins of Calakmul

The remains of many Maya houses can still be seen today


Generations of Maya constructed immense structures by simply adding new layers onto existing buildings, until they evolved from simple structures into towering pyramids

was no longer a centre of government and power, but apparently now being ruled by a puppet of Tikal, in a reversal of the situation that had occurred many years earlier.

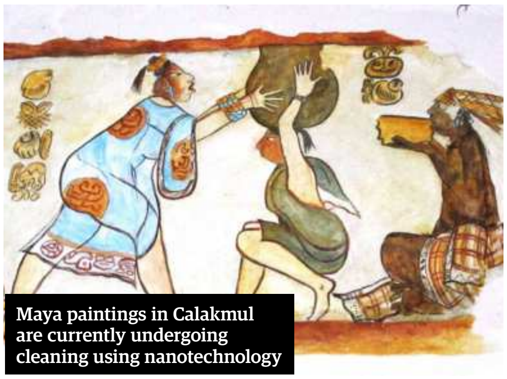
With the decline in power, the decline in hieroglyphic records also occurs, and depictions of events in Calakmul become sparing at best. Though it remained a military power, its alliances were less numerous and far less influential – the once-unstoppable state now diminished in the eyes of its neighbours and its own power.

With its power in rapid decline, the vast site shrank. Modern archaeologists have found no late-period Maya artefacts in the far-flung urban settlement areas, but only in the centre of the site, at what was once the governmental heart of the state. This clearly indicates that the outer reaches of Calakmul were no longer occupied at all, and that inhabitants were concentrated in a much smaller area. However, excavations have revealed precious metals and jade from this era, suggesting that at least some wealthy inhabitants remained. Sadly, a lack of any records means that who these people were remains a mystery.

When Calakmul emerged from the canopy of the tropical forest in 1931, Cyrus L Lundell reported his discovery to Sylvanus Morley of the Carnegie Institution of Washington. Morley, an inveterate cataloguer, travelled to Campeche and began mapping the site. He found multiple complete or damaged stelae and, pieced together with others found in the area, they told the fragmented narrative of Calakmul. When the Institute departed in 1938, the site lay undisturbed until 1982, when William J Folan of the Universidad Autónoma de Campeche arrived. He was to stay at Calakmul for 12 years, and uncovered thousands of structures and artefacts, including a number of funeral masks and stelae.

Today, Calakmul is a UNESCO World Heritage Site, and the limestone remains there are being preserved in situ thanks to groundbreaking nanotechnology that might have implications for sites of similar value and fragility around the world. Calakmul sits at the heart of a Biosphere Reserve that protects 7,000 square kilometres of jungle and community-owned and farmed lands, while encouraging sustainability in an area famed for its natural beauty and of particular interest not only to archaeologists, but to ornithologists too.

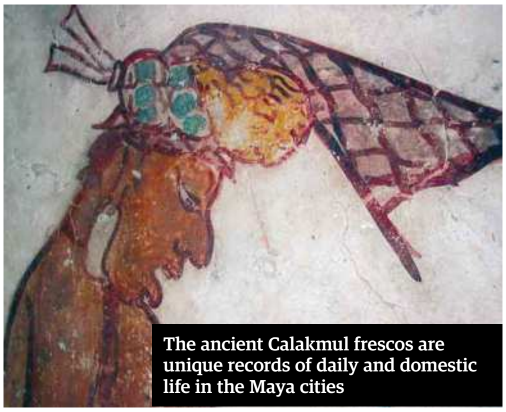
Calakmul is now the subject of a large-scale project of the National Institute of Anthropology and History (INAH)



Maya paintings in Calakmul are currently undergoing cleaning using nanotechnology

Despite 117 stelae surviving at Calakmul, the use of soft and easily eroded limestone means that many have become indecipherable over the centuries

This open area is actually a ball court, and can be found in the northern plaza of the Great Acropolis



The ancient Calakmul frescos are unique records of daily and domestic life in the Maya cities

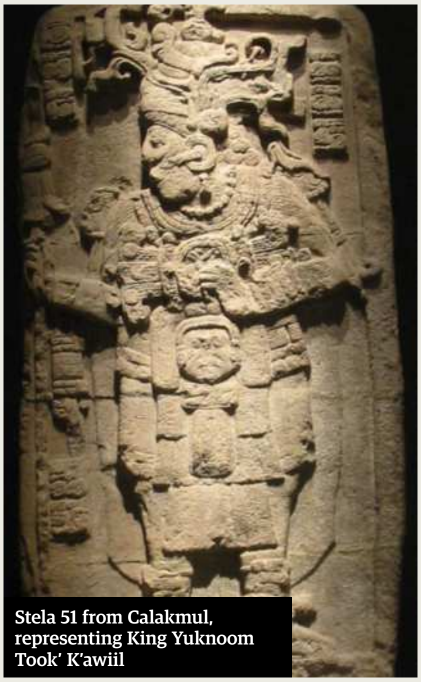
Telling the story of Calakmul

The history of Calakmul is one that is told through its contemporary artwork, much of which sadly didn't survive generations in its remote location.

To learn of the upper classes and rulers, archaeologists and historians have turned to the Calakmul stelae, of which 117 remain. These are Maya monuments in the form of stone columns, on which images are sculpted that tell of the history and achievements of the city. Just as Calakmul is one of the largest Maya sites still standing, its collection of stelae is the largest in Campeche, and proves that it was one of the few Maya cities that had female rulers in addition to male.

Many of the stelae that can be found at Calakmul are in matching pairs, depicting kings or rulers and their spouses but, unfortunately, time has eroded much of the detail that was once visible on these limestone carvings. Although the Calakmul stelae illuminate the most celebratory aspects of the city, to tell its full story archaeologists have been able to look to other cities, particularly Tikal, Calakmul's long-time adversary. Here, they have found other carvings telling of Tikal's own victories over Calakmul, thus allowing them to piece together a fragmented narrative of the frequent clashes between these two Maya superpowers.

For those more lowly citizens, depiction on a stelae was unthinkable. Calakmul does, however, contain a number of murals that show everyday life for the people who lived there. These are not the lofty achievements of empire-building monarchs, but street scenes showing markets and the comings and goings of those who used them. They are a unique and valuable artefact, and show a side of Maya civilisation that has often gone unrecorded and unremembered. After all, for every conquering king sitting on his throne, there were thousands of men and women at market!



Stela 51 from Calakmul, representing King Yuknoom Took' K'awiil

© Getty Images, Wiki: Ant Mela, Elelicht , PashiX, Pete Fordham, PhilipN

LA CIUDAD PERDIDA

La Ciudad Perdida lies deep in Colombia's Sierra Nevada de Santa Marta mountains, but for those who regard it as sacred, it was never lost at all

COLOMBIA
LA CIUDAD PERDIDA

In 1972, looters searching for treasure deep in the mountains of Colombia found a flight of ancient - apparently forgotten - steep, stone steps rising up into the thick vegetation. Clearing the dense foliage as they went, they climbed the steps and discovered the remains of a vast lost city, which nature had long since reclaimed. The looters nicknamed it Green Hell because of the treacherous conditions they found there, and set about clearing the ruins. They began to strip the site of the treasures they found there and, as jade figures and pottery began to appear for sale at local markets, Ciudad Perdida finally gave up its secrets to the outside world.

Yet for some, the knowledge of this so-called lost city had never been lost at all. At the foot of the mountains on which Ciudad Perdida stands, the indigenous people were not at all surprised by the news of a find of such architectural importance on their very doorstep. In fact, members of local Kogi and Wiwa tribes had known of and visited Ciudad Perdida all along, with stories of its existence passed down from generation to generation. The local inhabitants regularly made pilgrimages there, regarding it as a sacred place that they chose not to share with the rest of the world. In the mid-1970s, however, their secret was uncovered, and as researchers heard of the existence of the mysterious city, the once-remote landscape became a place of international interest.

Known to local people as Teyuna, Ciudad Perdida was once the heart of the kingdom of the Tairona people, who inhabited a network of more than 200 settlements established throughout the mountains. In fact, it's believed that the area around the Colombian Buritaca River may contain other

Tairona settlements that have yet to be uncovered. It is situated in an area that had long been considered off limits to outside visitors thanks to paramilitary activity in the region, which was well known as the location of some of Colombia's cocaine fields. This meant that when the Colombian Institute of Anthropology and History took responsibility of the site in 1976, they knew that their mission was a risky one. Those paramilitary groups disbanded in 2006, and over four decades of painstaking work, researchers have uncovered Ciudad Perdida bit by bit, discovering a city that stretches over 30 hectares and includes 200 structures, from the remains of residential areas to large ceremonial plateaus, with evidence of waterworks throughout.

Researchers discovered a city that predated the famed Machu Picchu by more than six centuries. They believe it was once home to 2,000-8,000 people, who carved out terraces from the steep face of the mountains and cultivated them for agriculture and trade, for the local production of pottery and to create the commercial and governmental heart of the Tairona nation.

The Tairona came to the mountains from the coast, where they vied for territory with other tribes. Focused on growth through manufacturing and trade, they were seeking a place to settle in which they could consolidate and establish their position. The vast mountain range seemed to offer this, as well as plenty of solitude and protection, so the Tairona decided to work with the landscape that they found. They built a city that was seemingly impervious to invaders, accessible only by days of trekking in sometimes trying conditions, and in which a surprise attack would be virtually impossible to pull off.

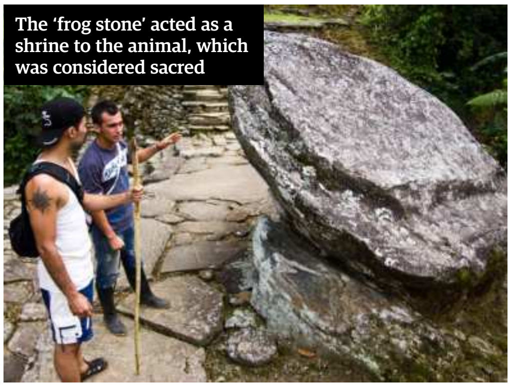
Today, their descendants still live in the area and many have become involved in the tourism industry, whether at campsites or as tour leaders, and treks to the city pass through their villages. Thanks to their willingness to share the history of their ancestors, modern researchers are able to understand Ciudad Perdida in a way that might otherwise have been denied to them.

As the site slowly began to emerge from the foliage, it became apparent that its layout was somewhat informal due to the nature of the territory, making it necessary to place plateaus and buildings where they fitted, rather than in order to execute some sort of carefully planned city layout. The foundations uncovered there are of round buildings, the style still favoured by the Tairona people's descendants, and though the buildings were wooden, the construction of the city around them was stone. Unfortunately, this does mean that understanding the individual use of each building and each uncovered area has been at times challenging, with archaeologists having to decipher one type of building from another. With looters having stripped Ciudad Perdida of artefacts that might have offered clues as to what each area was used for, uncovering the secrets of the city is a painstaking affair.

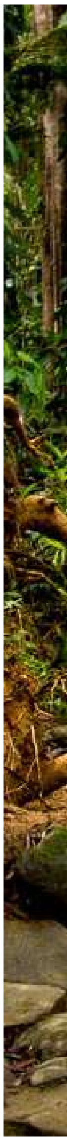
Ciudad Perdida was traversed via wide stone pathways, and higher platforms were reached by flights of stone steps not unlike those that were

> Members of local tribes supposedly visited the site regularly before it was widely discovered, but they kept quiet about it

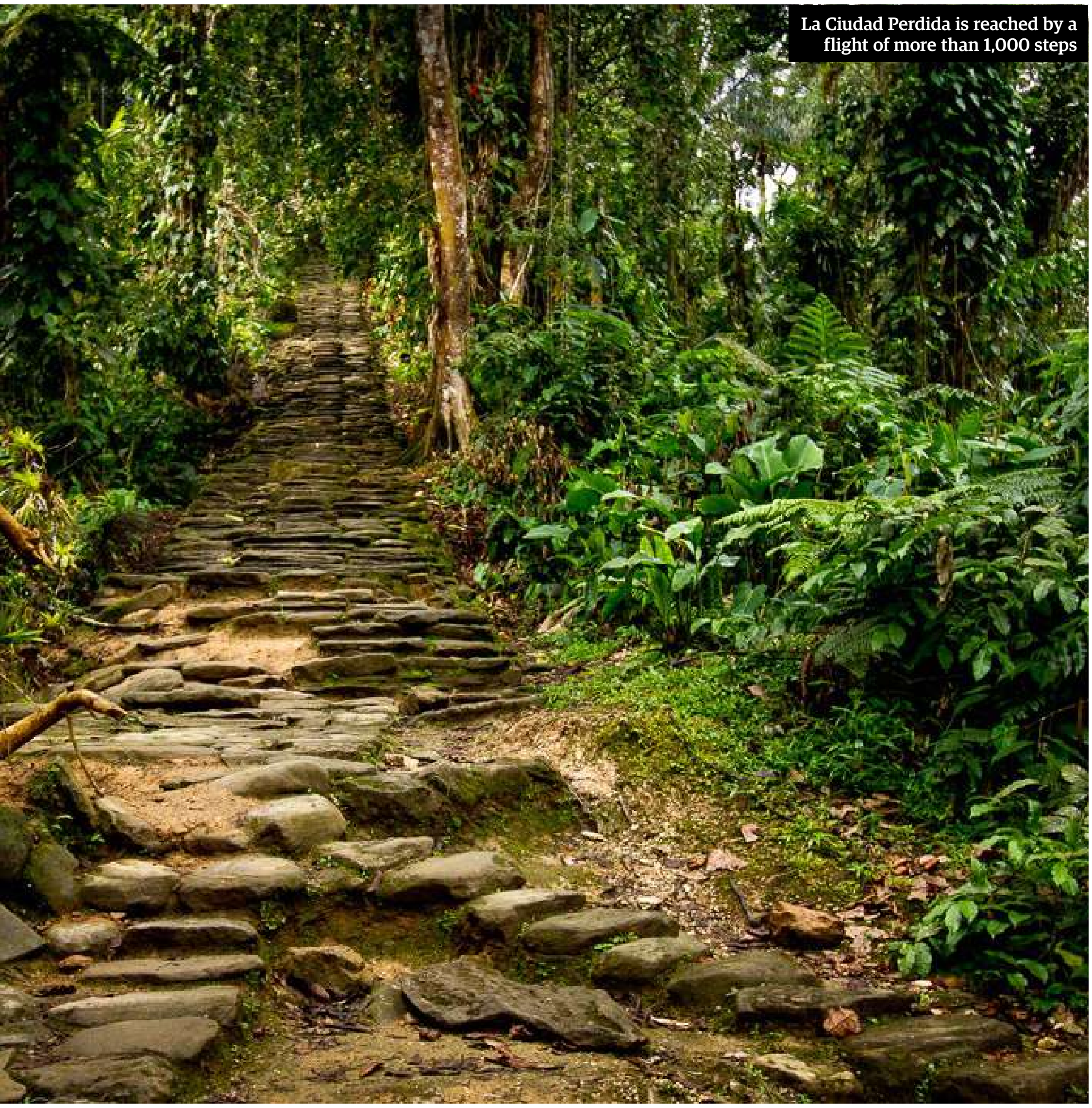
It is believed that Ciudad Perdida was once home to 2,000-8,000 people


The 'frog stone' acted as a shrine to the animal, which was considered sacred

Anyone hoping to enter Ciudad Perdida still has to cross a formidable river



Ceremonial terraces were built in circular shapes


La Ciudad Perdida is reached by a flight of more than 1,000 steps

The Tairona of Ciudad Perdida

Global Heritage Fund's Santiago Giraldo offers his insight

Expert bio: Santiago Giraldo PhD joined Global Heritage Fund as the director of the Colombia Heritage Program, centring on developing a Master Management Plan for Teyuna-Ciudad Perdida Archaeological Park. He holds an MA in Social Sciences and a PhD in Anthropology, both from the University of Chicago.

What's been the most exciting discovery for you at Ciudad Perdida?
The most exciting discovery was finding that Neguanje period (200-1000 CE) structures were buried below the Tairona architecture on view, but had remained undiscovered all that time. It opened up a huge number of questions, and also raised some important challenges regarding the research and conservation.

Has the work at Ciudad Perdida changed your understanding of Tairona society?
In general, recent work in different parts of the Sierra Nevada, including mine, has indeed challenged prior understandings of polities classified under the 'Tairona' rubric. At least from our point of view, it has tried to complicate rather simplistic interpretations and conclusions that were drawn with very little evidence. As work progresses at different sites, it has become more and more evident that our understanding of Tairona society is still relatively basic at this point. We have just about 14 centuries of history that need to be pieced together, so there is a lot of work that still needs to be done.

Will any of the site be left for the sole use of indigenous people?
There are more than 500 Tairona sites strewn about the western and northern sides of the Sierra, and quite a few relatively recently built indigenous towns are located on what used to be Tairona towns. So in that sense, a rather large number of indigenous villages already have sole use of areas that used to be Tairona towns and villages. The Colombian Institute of Anthropology and History has tried to provide equitable access to the site for all Colombian citizens, be they indigenous or not, and foreign visitors. Only three Tairona sites out of these 500 are currently open to the public. In any case, the institute allows an indigenous priest to live at Ciudad Perdida, and close the park during 15 days in September to allow for rituals.

Paved walkways connect the terraces

The circular huts built by the Tairona people are still favoured by their descendents

What happened to the city?

Disease

When the Spanish Conquistadors arrived in Colombia, they brought with them diseases that had previously not been known in the country. Did the citizens of Ciudad Perdida fall victim to these illnesses?

Conflict

Rich with gold, the hills around Ciudad Perdida would have been tempting indeed to others looking to gain a foothold. Although it's possible that conflict laid waste to the city, there is no definite proof for this.

Religion

Once again, this theory places the blame on the Spanish Conquistadors. Faced with a population who refused to convert to Catholicism, were the people of Ciudad Perdida simply slaughtered by their European invaders?

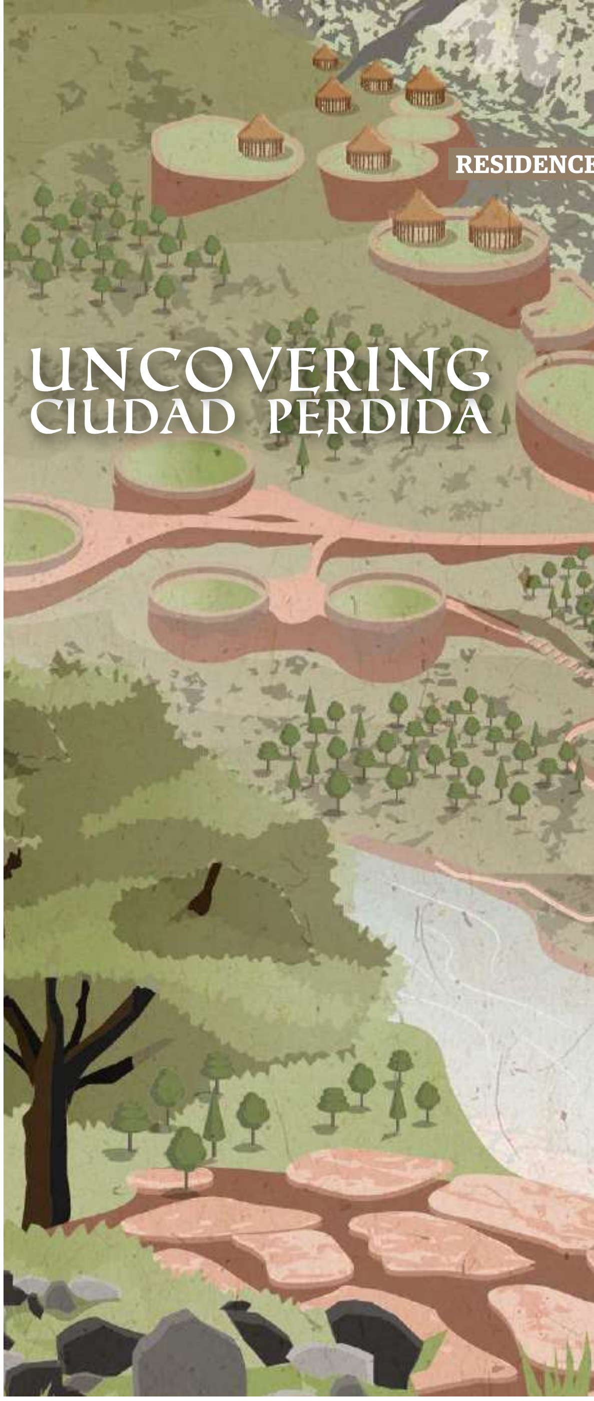
discovered by the treasure hunters in the 1970s. With a sometimes raging river and over 1,000 steps standing between the entrance to the city and the land below, there was a defensive sense to the layout too, for it meant that no one could attack without the Tairona receiving notice of their approach. And that approach wouldn't be an easy one for any visitors with invasion on their mind. There is, however, a method in the planning of the town, as in many areas a terrace and residential structure acted as a hub, which was connected by pathways to others, like the centre of a wheel attached by spokes to other wheels and so on. With a lack of external walls to create boundaries between plateaus and other areas, researchers are still trying to fully understand exactly how the Tairona people interacted in terms of who was allowed to access where, when seemingly nowhere was off limits due to the city's layout.

In their mountain citadel, day-to-day life for the inhabitants of Tairona was peaceful, and their society was supported by agriculture and crafts, with pottery being created and sold to neighbouring settlements, as well as to other groups in the area around the river. Some of this pottery was among the artefacts stolen and sold on by looters in the 1970s. In addition, this was a society in which ritual was of vital importance, and the Tairona paid tribute to the natural world in everything they did, taking only what they needed from the landscape and offering thanks when they did so.

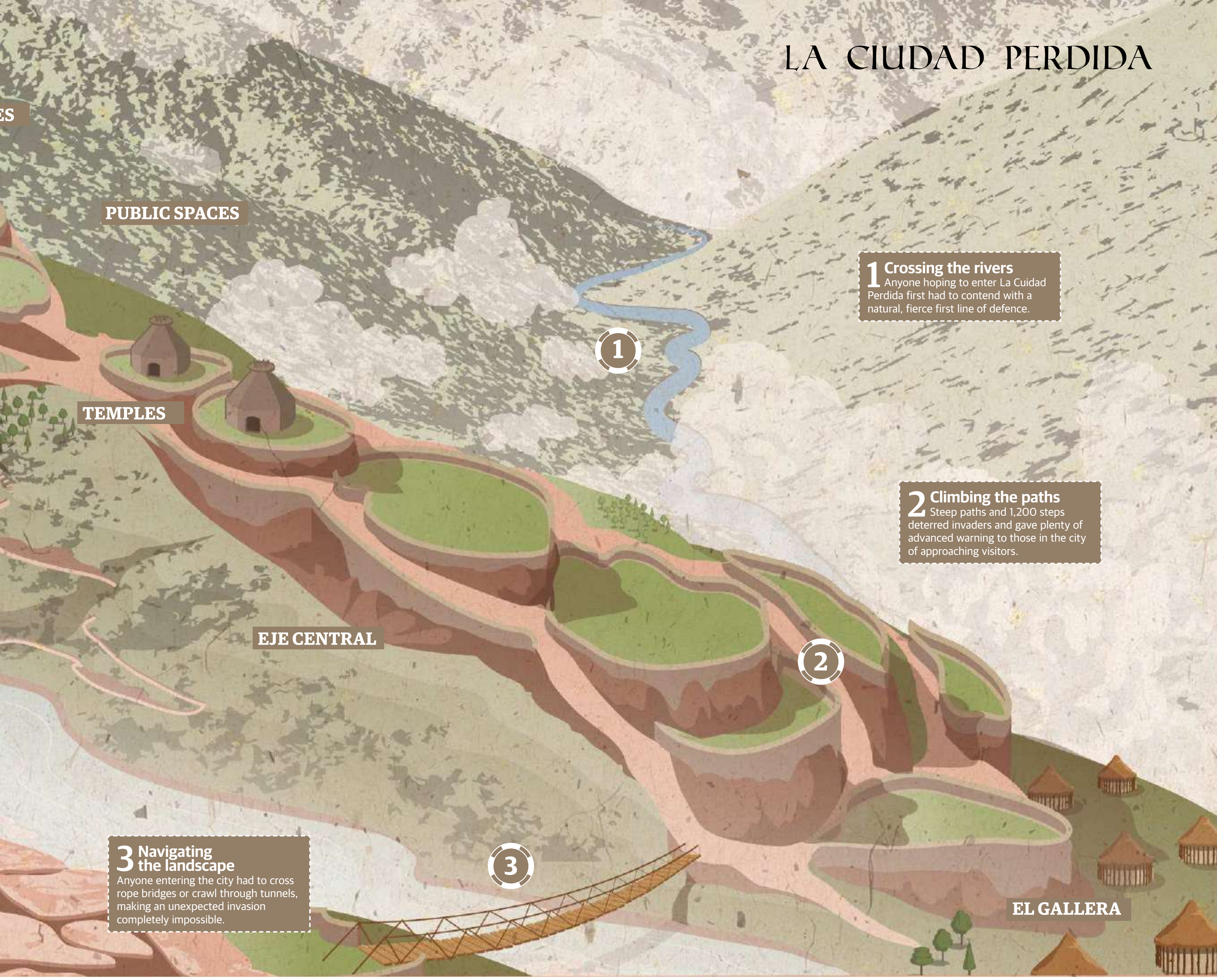
> Inhabitants of Tairona led peaceful lives, carrying out agriculture and crafts, as well as ritual

The Tairona, however, faced a foe that they were utterly unprepared for when the Spanish fleets arrived in Colombia in the 1500s. The city was abandoned at some point in this period, but the reason why it was deserted remains a mystery. As the foliage grew denser and swallowed its structures and platforms, it seemed as though Ciudad Perdida would be forgotten by the outside world. In fact, the opposite has happened.

Today, Ciudad Perdida sits within a UNESCO biosphere and is cared for by Global Heritage Fund and the Colombian Institute of Anthropology and History. With the city becoming exposed to the wider world for the first time in centuries, it faces new threats from



UNCOVERING CIUDAD PERDIDA



1 Crossing the rivers Anyone hoping to enter La Cuidad Perdida first had to contend with a natural, fierce first line of defence.

2 Climbing the paths Steep paths and 1,200 steps deterred invaders and gave plenty of advanced warning to those in the city of approaching visitors.

3 Navigating the landscape Anyone entering the city had to cross rope bridges or crawl through tunnels, making an unexpected invasion completely impossible.

> "The foliage grew denser and swallowed its structures and platforms"

environmental erosion and looters, not to mention a vast increase in the number of visitors. For this reason, it's necessary to ensure that the excavations that are accessible to the public don't undergo any further damage, and the Global Heritage Fund and Colombian Institute of Anthropology and History are committed to ensuring its future preservation and regulating the impact of visits to Ciudad Perdida. They have created digital models of the site and mapped its plateaus and trails for the first time since the Tairona built their city centuries ago.

Although the paramilitary groups that once threatened the area have now demobilised, it has been vital that the work at Ciudad Perdida doesn't hamper the efforts by local people to emerge from the shadow of this long-standing threat. The Global Heritage Fund places a great deal of importance on community development and is working closely with indigenous people to ensure that they are part of ongoing work at Ciudad Perdida, and that the increased tourist numbers don't have a detrimental impact on their way of life. They are also working with the local people who have joined the tourist trade to encourage sustainable techniques, as well as ensure that guides, hosts and infrastructure are all up to an appropriate standard.

It is hoped that this cooperation between researchers and locals will ensure that La Ciudad Perdida and the wider area can be sympathetically cared for and preserved. This way, travellers will still be able to visit the lost city and see its evocative sites of a lost civilisation while those who worship in these sacred lands can still do so, with both the beliefs of the indigenous people and the remains of the site itself shown the respect and understanding that they deserve.

This carved boulder is believed by some to show a map of the stars

© Dwayne Relander, ThinkStock, Gettyimages, 150 images, Ed Crooks

Ciudad Perdida tribes

A member of an indigenous tribe, the Kogi, stands on one of the terraces where Ciudad Perdida once stood. Other tribes local to the site claim to have visited it numerous times before it was 'rediscovered', but did not tell others about its location. Perhaps if looters hadn't discover it by accident in the Seventies, we wouldn't know of it today.

© Dwayne Reilander

ANGKOR

Deep in the Cambodian jungle, the ruins of a Medieval civilisation lay forgotten for centuries, until one day an explorer stumbled upon the jewel of the Khmer Empire

CAMBODIA
ANGKOR

In 1860, a French naturalist, Henri Mouhot, exploring the Cambodian jungle some 30 kilometres (18 miles) north of the great lake of Tonle Sap, came across a vast and mysterious mass of ruins – walls, towers, statues and friezes gripped by ancient trunks and roots. For Mouhot, it was a revelation, "grander than anything left to us by Greece or Rome." He died the following year but his diaries, published in French and English, took Europe by storm. France, busy establishing colonial rule in Indo-China – today's Cambodia, Vietnam, Laos and Thailand – took the lead in bringing to light a little-known empire whose temples form the world's most lavish religious complex.

Recent research has revealed that the foundations for growth were laid in the 8th century. In 802 Cambodia was united by a Khmer king, Jayavarman II, who fought off Javanese overlords, named his realm Kambuja after an early north-Indian state, and introduced the cult of the 'god-king', the earth-bound counterpart of the Hindu god Shiva. With more conquests, Kambuja grew to include present-day Thailand, half of Laos and the southernmost part of Vietnam.

Its capital Yasodhapura became better known by its later name of Angkor (from the Sanskrit nagara, 'city' or 'capital'), which evolved into a cluster of temples, each the heart of a suburb, or sub-capital. Empires need armies and buildings require workers, and both need food, so Jayavarman and his heirs turned the plain on which they built into a giant agri-business devoted to rice production.

To control the water supply, the Khmer kings deployed tens of thousands of labourers to dig canals and reservoirs, known as barays, which in

LIFE IN ANGKOR

In 1296, as the Khmer Empire approached its end, Zhou Daguan arrived on a mission from the emperor of China. As well as recording the king's public appearances, his diary reveals a fascination for his host's domestic life

TOILET ARRANGEMENTS

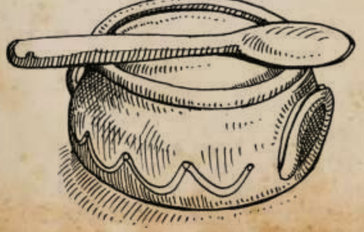
For two out of three families, people dig a ditch and cover it with grass. When it is full, they fill it up and dig another elsewhere. After going to the toilet, they always enter the pool to wash themselves, but only use their left hand - the right hand is kept for eating. When they see a Chinese going to the toilet and wiping himself with paper, they tease him... There are some women who urinate standing - that is really absurd.

CHILDBIRTH

As soon as they have given birth, the native women prepare hot rice, knead it with salt, and apply it to their private parts. A day and a night later, they remove it. In this way the birth has no undesirable consequences, and causes a constriction that leaves the women like a virgin... I could hardly believe it. But in the family where I lodged, a girl gave birth to a baby, and I was able to inform myself completely about it.

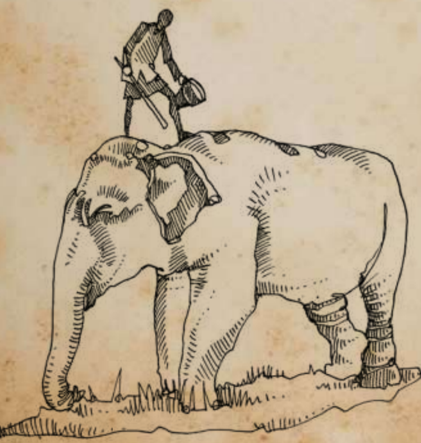
COOKING UTENSILS

Ordinary people have a home, but no tables, seats, basins or buckets. They only use an earthenware pot for cooking rice, and in addition use an earthenware stove to prepare sauces... For sauces, they use leaves of trees that they make into small cups, which, even when full of liquid do not leak. They also make small spoons out of leaves... When they have finished eating they throw them away. At night there are many mosquitoes, so they use cloth mosquito nets.



THE ROYAL PROCESSION

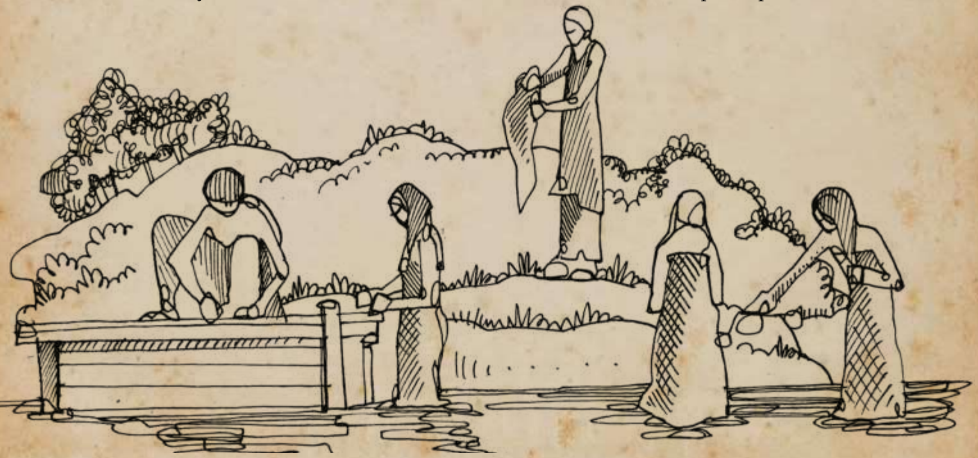
When the prince goes out, he is preceded by an escort of soldiers; then come the standards, the pennants and music. Between three and five hundred palace maidens, dressed in fabrics decorated with foliage, and with flowers in their chignons, hold candles and form a troop of their own; even in full daylight their candles are lit. Then come other palace maidens carrying the royal gold and silver utensils and a whole series of ornaments, all of very unusual design and whose purpose I do not know. Then came palace maidens holding spears and shields - they are the palace's private guard, and they too form a troop of their own. Afterward come carts drawn by goats and carts drawn by horses, all of them decorated with gold. The ministers and the princes are all mounted on elephants; their innumerable red parasols can be seen from afar. After them come the king's wives and concubines, in palanquins, in carts, on horses, on elephants - certainly they have more than one hundred parasols flecked with gold. Behind them, there is the king, standing up on an elephant and holding in his hand the precious sword. The elephant's tusks are likewise sheathed in gold. There are more than 20 white parasols flecked with gold and with gold handles. Many elephants crowd around him, and here too there are troops to protect him.



BATHING

The country is terribly hot and one cannot pass a day without bathing several times. Even at night one does not fail to bathe once or twice. In the houses, there are neither baths, washbasins nor buckets. But usually each family has a pool; if not two or three families share one. Everyone, men and women, enters the pool naked. Women hide their private parts with the left hand as they enter the water.

Every three or four days, the women go in groups to bathe outside the city in the river... several thousand gather there in the water. Even the ladies from the noble houses participate in these baths.



A famous smile face statue of Prasat Bayon temple

Ta Prohm temple in Angkor has been taken over by the forest

> "The temples were immense artistic and technical achievements"

the wet season collected water from the rivers that flowed into the Tonle Sap, and dispensed it in the dry season. Over some three centuries, Angkor acquired four barays, the largest, the West Baray, being eight kilometres (five miles) long and 2.2 kilometres (1.4 miles) wide. The whole system, sealed in laterite, a sort of clay, and regularly dredged of accumulating silt, turned Angkor into a so-called 'hydraulic city'.

Cambodia's god-kings apparently served several functions. They were the embodiment first of Shiva, spirit of the ancestors and the earth and the fount of fertility, and then of Vishnu, upholder of all creation. As national heroes, they were a personification of all virtues: bravery, artistry, sexuality and spirituality. After they died, their temple became their symbolic body, animated by ritual, connecting past to future. The cult guaranteed not only the kings' authority but also that of the elite below them, ensuring an upward flow of wealth from the land into the temples, the statues and the 1,300 inscriptions that provide highly selective details of their reigns.

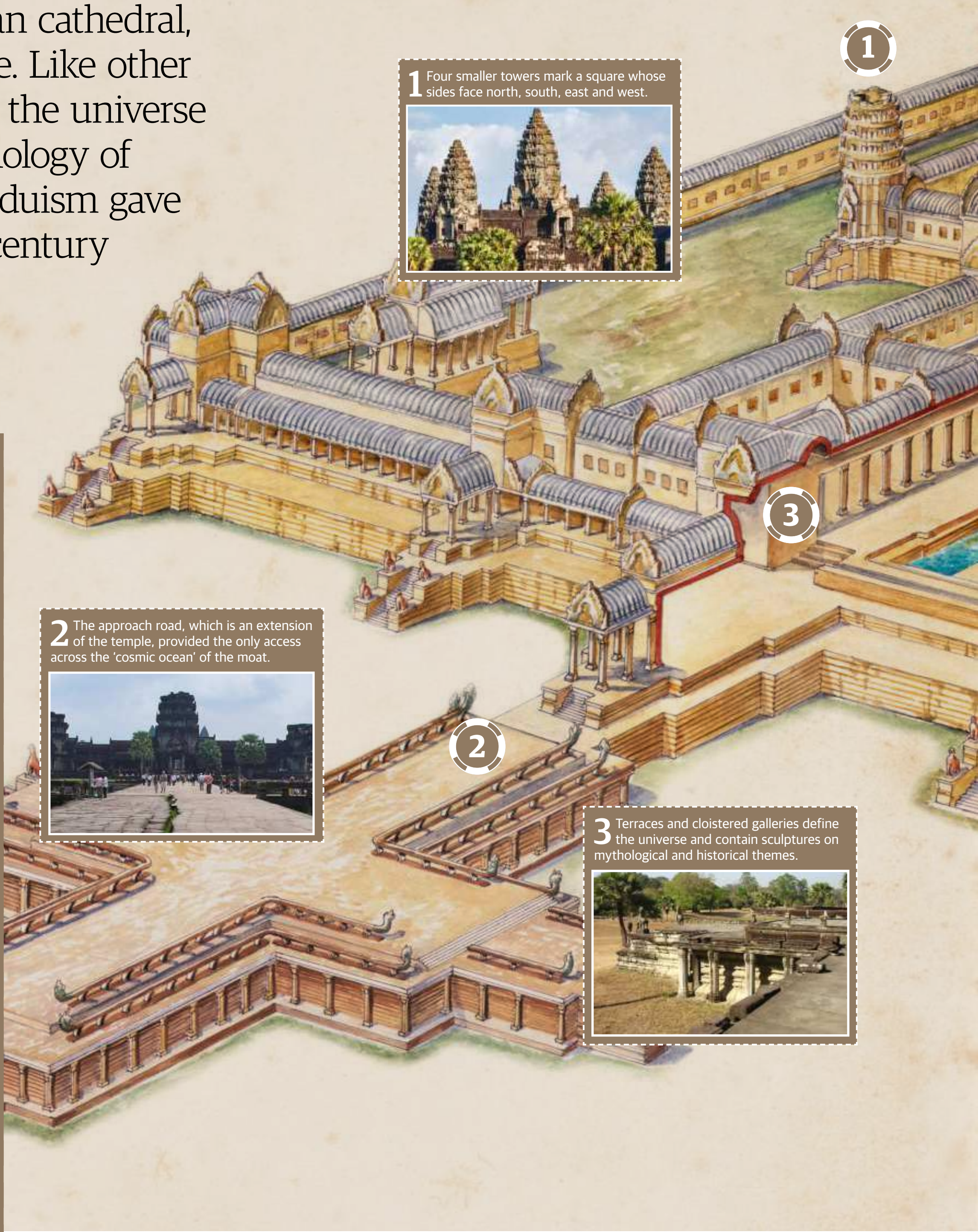
With well-watered rice paddies, the Khmer kings could feed the soldiers and labourers on which their empire and vast building projects depended. At its height, Angkor supported some 750,000 people, all living in a low-density city the size of New York. Eventually there would be some 100 temples, scattered among huge numbers of wooden palaces and administrative buildings that have since vanished. These are increasingly being revealed by aerial surveys, such as those used by Roland Fletcher of Sydney University.

The temples were immense artistic and technical achievements. The stones, each weighing up to eight tons, were first cut in quarries to the north then dragged onto barges by elephants, floated downriver, and rubbed by labourers until they fitted exactly, held in place by tongue-and-groove joints and iron struts.

No two blocks are alike - every structure is a patchwork of irregular stones. These stone templates were carved to form windows, doors, bas-reliefs, inscriptions and even mock tiles to simulate roofs. For 500 years, each successive king created

TEMPLE OF ANGKOR WAT

Angkor Wat, like a European cathedral, is religion turned into stone. Like other temple-cities, it symbolises the universe as seen in the Hindu mythology of Ancient India. Though Hinduism gave way to Buddhism in 12th-century Cambodia, the underlying symbols and structures remained unchanged



1 Four smaller towers mark a square whose sides face north, south, east and west.

2 The approach road, which is an extension of the temple, provided the only access across the 'cosmic ocean' of the moat.

3 Terraces and cloistered galleries define the universe and contain sculptures on mythological and historical themes.

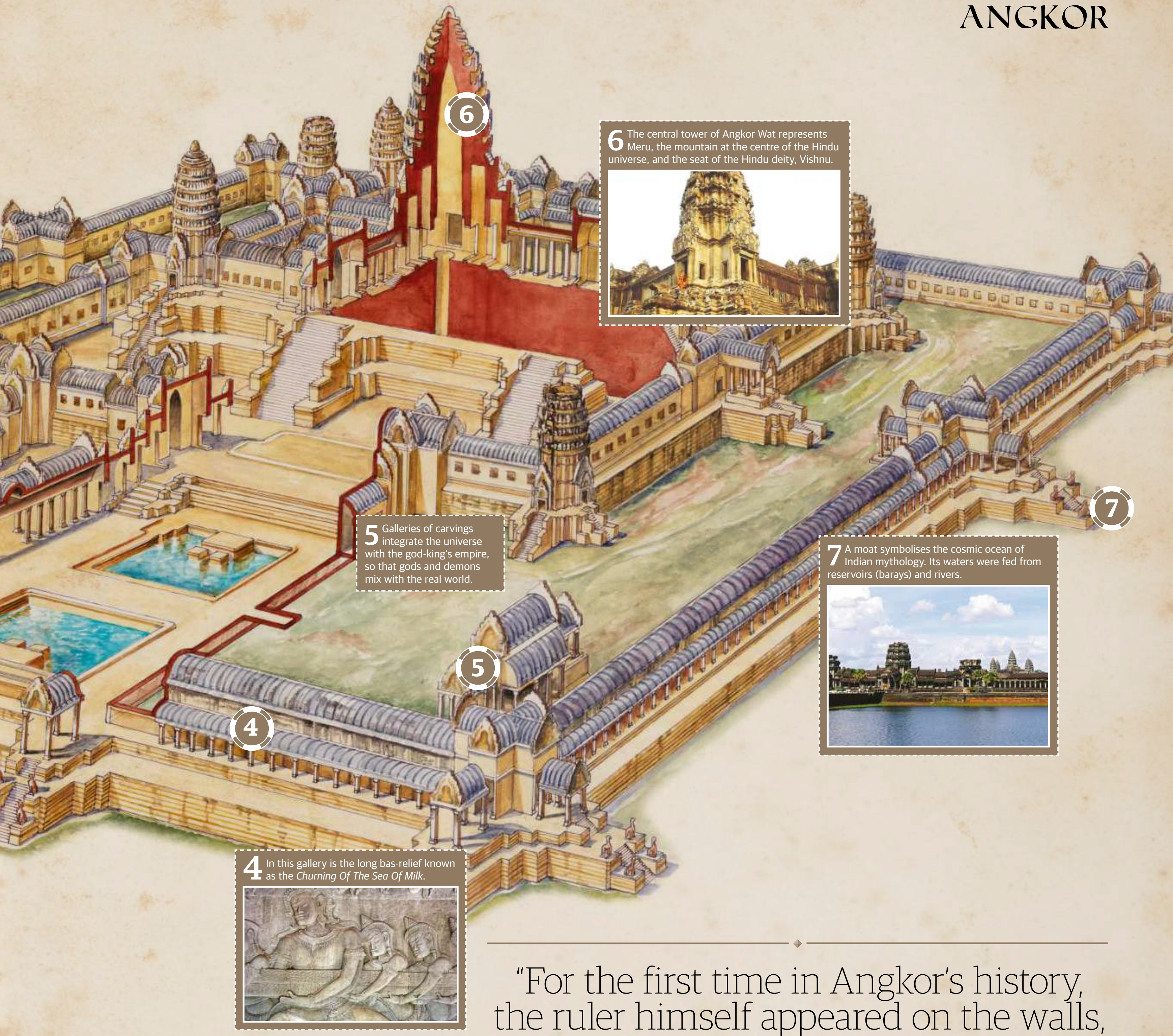
Astronomy recorded in stone

Since Angkor's temples are memorials to their 'universal' god-kings on a cosmic scale, the universe is reflected in their design – particularly in Angkor Wat itself. Many measurements taken from the architecture and bas-reliefs produce astronomical figures, as recorded in Hindu traditions that date back almost 2,000 years. Among the numbers are days in the month and year, and years in Hindu epochs. For example, the width of the moat in Cambodian cubits is about 432, corresponding to the current epoch (the 'Kali yuga') of 432,000 years. The main altar symbolises the Earth and therefore one of its five layers has 360 stones around it, symbolising the days in a lunar year (12 months of 30 days each). Other layers represent the year's division into two unequal halves – autumn to spring is about eight days shorter than spring to autumn – with an extra brick portraying the difference. That difference, when divided in half, also seems to be suggested in the 92 devas (gods) and 88 asuras (demons) pulling against each other in the Churning Of The Sea Of Milk.

new temples, palaces and carvings in honour of his ancestors, his gods and himself.

Initially, in the 9th and 10th centuries, the barays framed 'temple mountains' that represented Shiva's mythical sea-girt dwelling place, Mount Meru, and also acted as royal tombs. In later designs, the towers were surrounded by courtyards, moats, galleries, colonnades and corner-towers, all wreathed in statuary. In 968, Jayavarman V inherited the throne. This shadowy figure, about whom little was recorded, was a boy of ten when he succeeded and spent some years supervised by relatives and officials. The role of his supervisors is recalled in the inscriptions of one of Angkor's finest temples, Banteay Srei (Fortress of Women), named after the female figures decorating its towers.

A small, delicate temple of pink sandstone, standing some 25 kilometres (15 miles) apart from Angkor's main temple complex, it was recovered from the jungle in 1914. Later, Jayavarman built the



6 The central tower of Angkor Wat represents Meru, the mountain at the centre of the Hindu universe, and the seat of the Hindu deity, Vishnu.

5 Galleries of carvings integrate the universe with the god-king's empire, so that gods and demons mix with the real world.

7 A moat symbolises the cosmic ocean of Indian mythology. Its waters were fed from reservoirs (barays) and rivers.

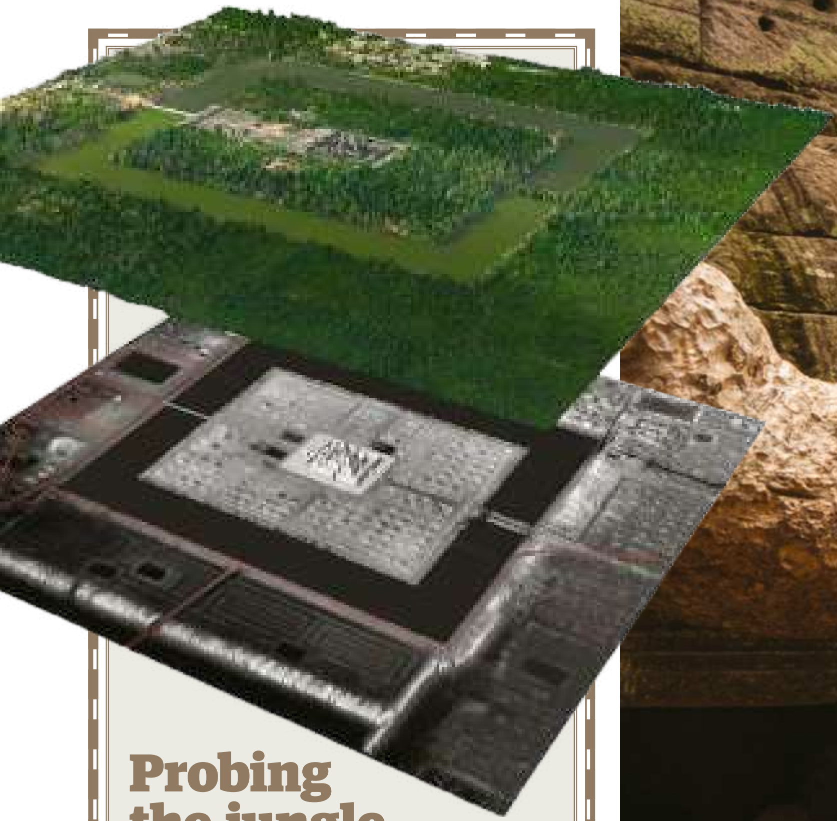
4 In this gallery is the long bas-relief known as the *Churning Of The Sea Of Milk*.

> "For the first time in Angkor's history, the ruler himself appeared on the walls, riding on a war elephant in a sea of fluttering parasols"

Royal Palace, which was 600 x 250 metres (1,968 x 820 feet) big – now inside the 12th-century Angkor Thom, two rectangular buildings – North and South Khleang ('emporium'), the purpose of which is unknown and a huge five-tiered temple-mountain, Ta Keo, which was left unfinished.

Jayavarman has one other claim to fame. Although a Hindu Shaivite – a worshipper of Shiva – he was tolerant of Buddhism, which had first appeared in the area over two centuries before and had been making an increasing impact from the early 10th century. His apparently peaceful reign reinforced the tradition by which Buddhist elements fused with – and later dominated – Hindu ones, apparently without conflict.

Angkor's most astonishing creation, built by Suryavarman II in the mid-12th century, is Angkor Wat ('city-temple'). Its nine towers and 800 metres (2,625 feet) of bas-reliefs depicting royal processions, battles and lines of slim, full-breasted maidens all form a memorial to the king's 37-year rule, his conquests and his power. For the first time in Angkor's history, the ruler himself appeared on the walls, riding on a war elephant in a sea of fluttering parasols, the symbols of royalty. Perhaps the most spectacular carving is the immense bas-relief known as the Churning Of The Sea Of Milk, 48 metres (157 feet) long and three metres (9.8 feet) high, set in a long narrow corridor that makes it impossible to take in the carving all at once. In

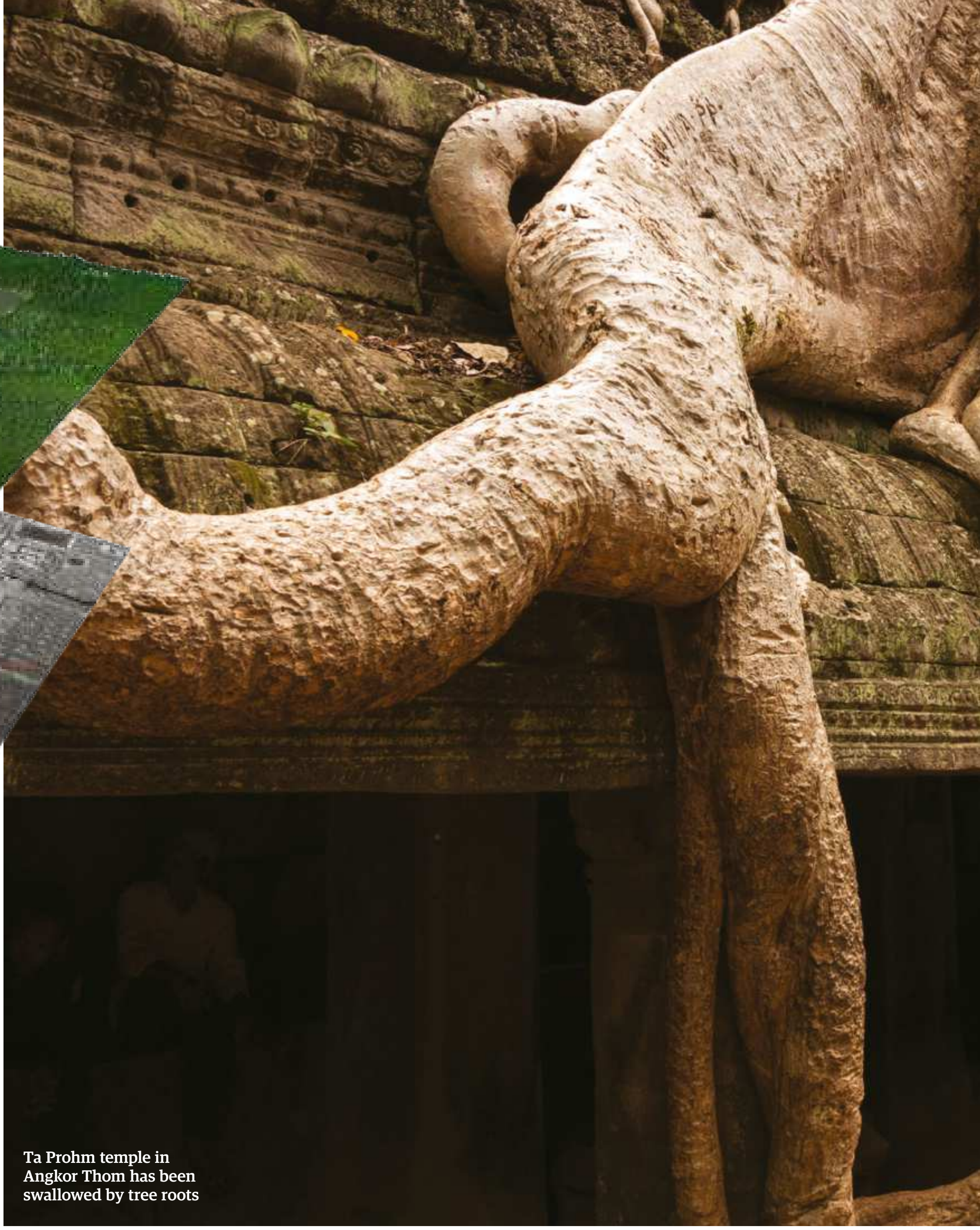


Probing the jungle canopy

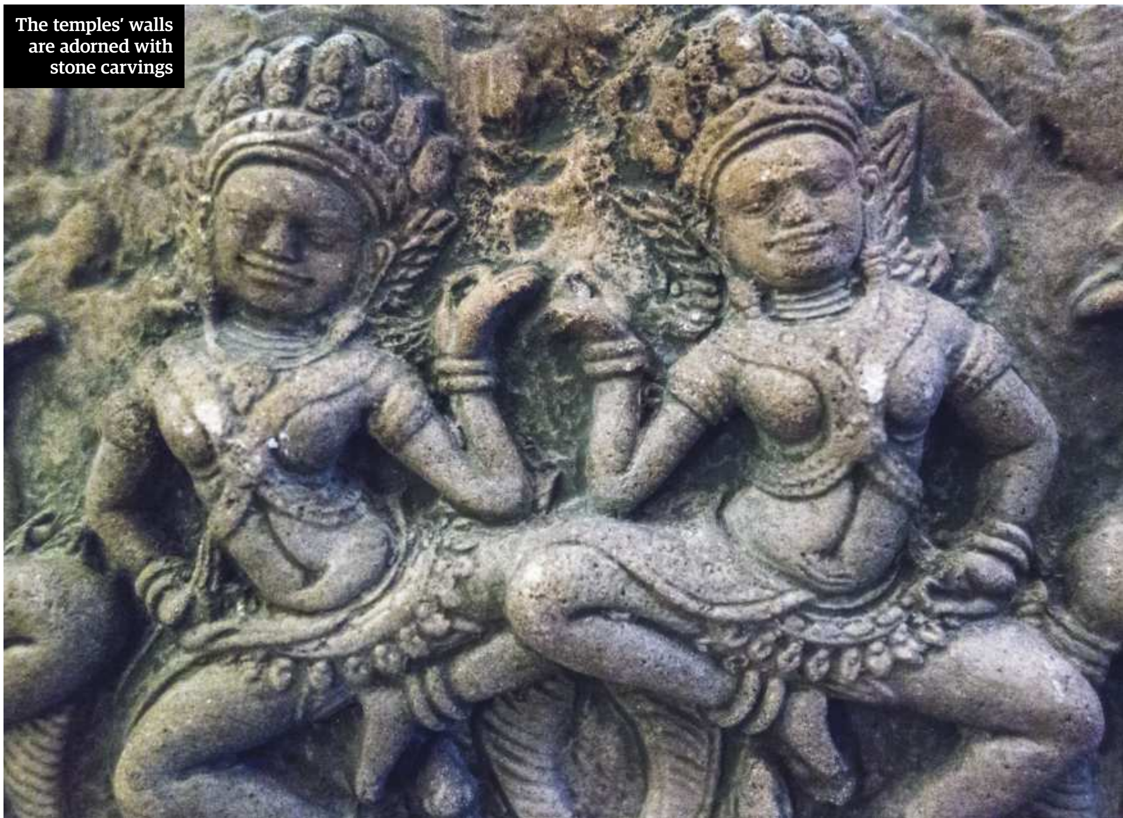
Stone temples and their surroundings are the skeletons of the vanished Khmer Empire, easily visible in the jungle canopy. Scholars assumed the city's inhabitants lived in wood-and-thatch houses mostly within the surrounding walls of the temples that form the hearts of successive capitals. It seemed all evidence of the flimsy houses was lost forever beneath the jungle.

In 2012, though, in a project of remote sensing headed by Roland Fletcher of Sydney University, new technology brought this hidden world to light for the first time. The main technique is 'lidar' (light + radar), in which an airborne source of laser light fires pulses at a rate of 150,000 per second, which are reflected from the ground to produce a three-dimensional map to an accuracy of under 20 centimetres (eight inches). Even over jungle, enough laser light penetrates between the leaves to provide stunningly accurate details of the ground.

The results reveal that the temples were surrounded by immense cityscapes of roads, canals, ponds, field boundaries and occupation mounds. In one of the most remarkable discoveries, the survey revealed a pre-imperial capital, Mahendrapavarta, previously known only from inscriptions. Similar finds redefine the outlying cities of Phnom Kulen and Koh Ker. Angkor Thom and its surroundings, previously thought to only cover nine square kilometres (3.5 square miles), is now seen to be set in grids of canals, roads and embankments that almost quadruple its size to 35 square kilometres (13.5 square miles). In this new view, the temples appear less as separate sub-capitals and more as 'nodes' of a 'hydraulic city' that once covered some 1,000 square kilometres (386 square miles). The findings, writes Roland Fletcher and his co-authors, are vital to help explain the growth and collapse of this unique civilisation.



Ta Prohm temple in Angkor Thom has been swallowed by tree roots



The temples' walls are adorned with stone carvings

> “It was too much. The immense effort had drained the empire’s economic lifeblood”

this version of an ancient Indian story, Lord Vishnu persuades demons (asuras) and gods (devas) to co-operate in finding the elixir of immortality in the cosmic ocean for him. Using a sacred mountain as a pivot and a supernatural five-headed snake as a rope, they pull back and forth, causing the mountain to swivel and stir the waters to produce the sought-after elixir.

A generation later, after a time of destruction at the hands of Cham – invaders from today’s south Vietnam – Jayavarman VII became determined to exceed his predecessor’s achievement, building the moated city of Angkor Thom, with its complexes of Preah Kai, Ta Prohm, Ta Som, Banteay Prei and dozens of other structures that may have been hostels and hospitals for pilgrims. He built more than all the other kings put together. Each project demanded immense quantities of manpower and food: an inscription in Ta Prohm mentions a staff of 12,640 sustained by rice from 66,000 farmers. Jayarvarman’s Buddhist temple, Bayon, displays worshippers, deities, floral patterns, huge faces (possibly self-portraits) and a naval battle on the Tonle Sap, which hints at the threats from increasingly powerful neighbours.

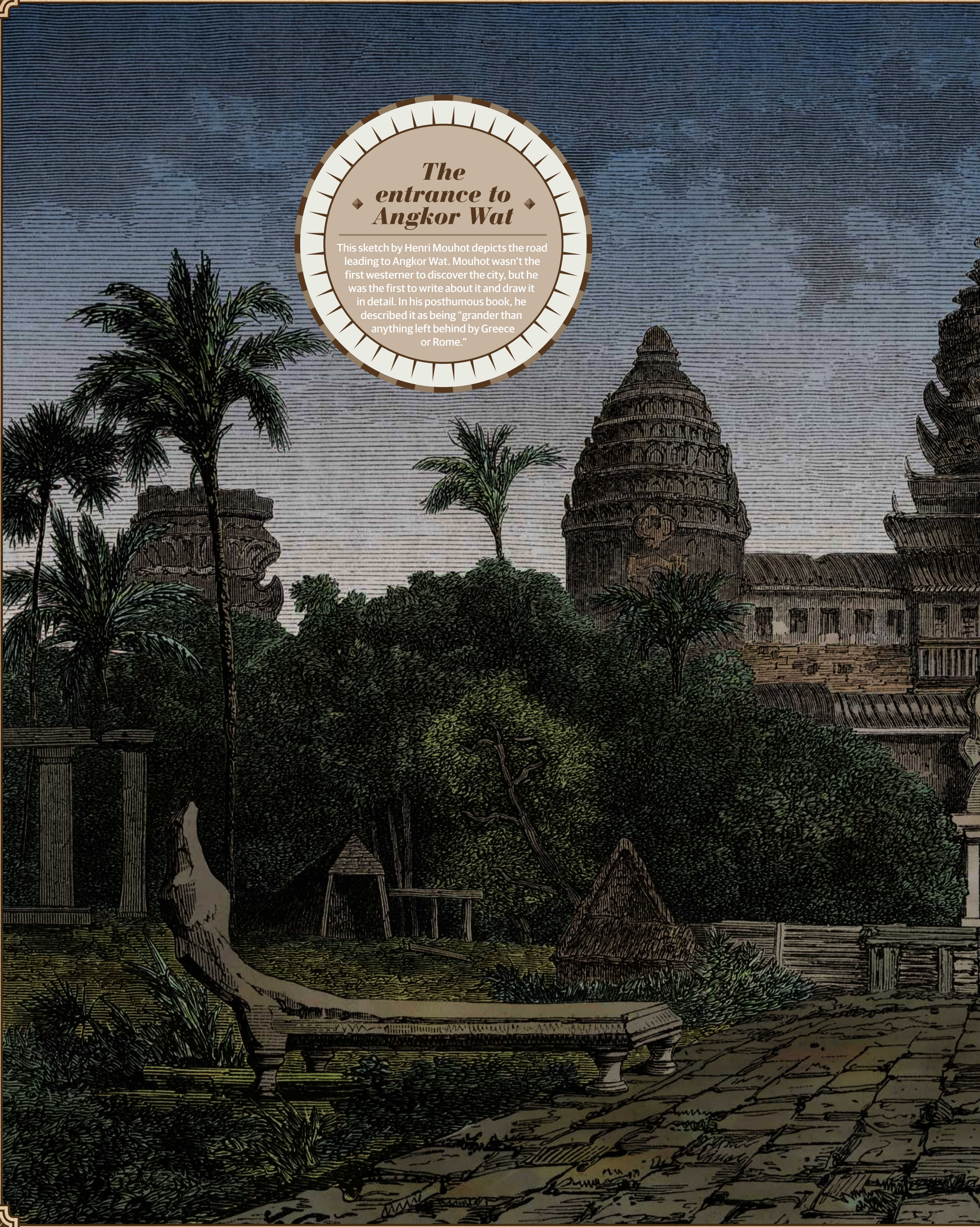
It was too much. The immense effort had drained the empire’s economic lifeblood. With the surrounding forests cleared, the Khmers had undermined their own ecology. The death blow – according to archaeologist Roland Fletcher – came from climate change, as the northern hemisphere entered the so-called Little Ice Age, which lasted for some 150 years from the mid-13th century. In Fletcher’s words, warm and relatively stable conditions gave way to “terrible fluctuations between very intense monsoon rains and extreme drought.” Taxes could no longer sustain the bureaucracy, the army, the artists and the labourers. The barays silted up, dams collapsed, and the metropolis died. With Thai and Lao peoples sweeping down from the northern hills, tribute from outlying regions vanished.

In 1431, destruction at the hands of invaders from Thailand forced the court to the safety of Phnom Penh (today’s capital of Cambodia), and the abandoned temples of Angkor were left to the encroaching jungle. The population declined, leaving only a few rice growers. Tree roots prised stones apart, galleries became caves for bats and bat-dung ate away at the foundations, until the reports of Mouhot and other western researchers started the process of restoration.

© Thinkstock, Corbis, Khmer Archaeology Lidar Consortium, Sol90 Images

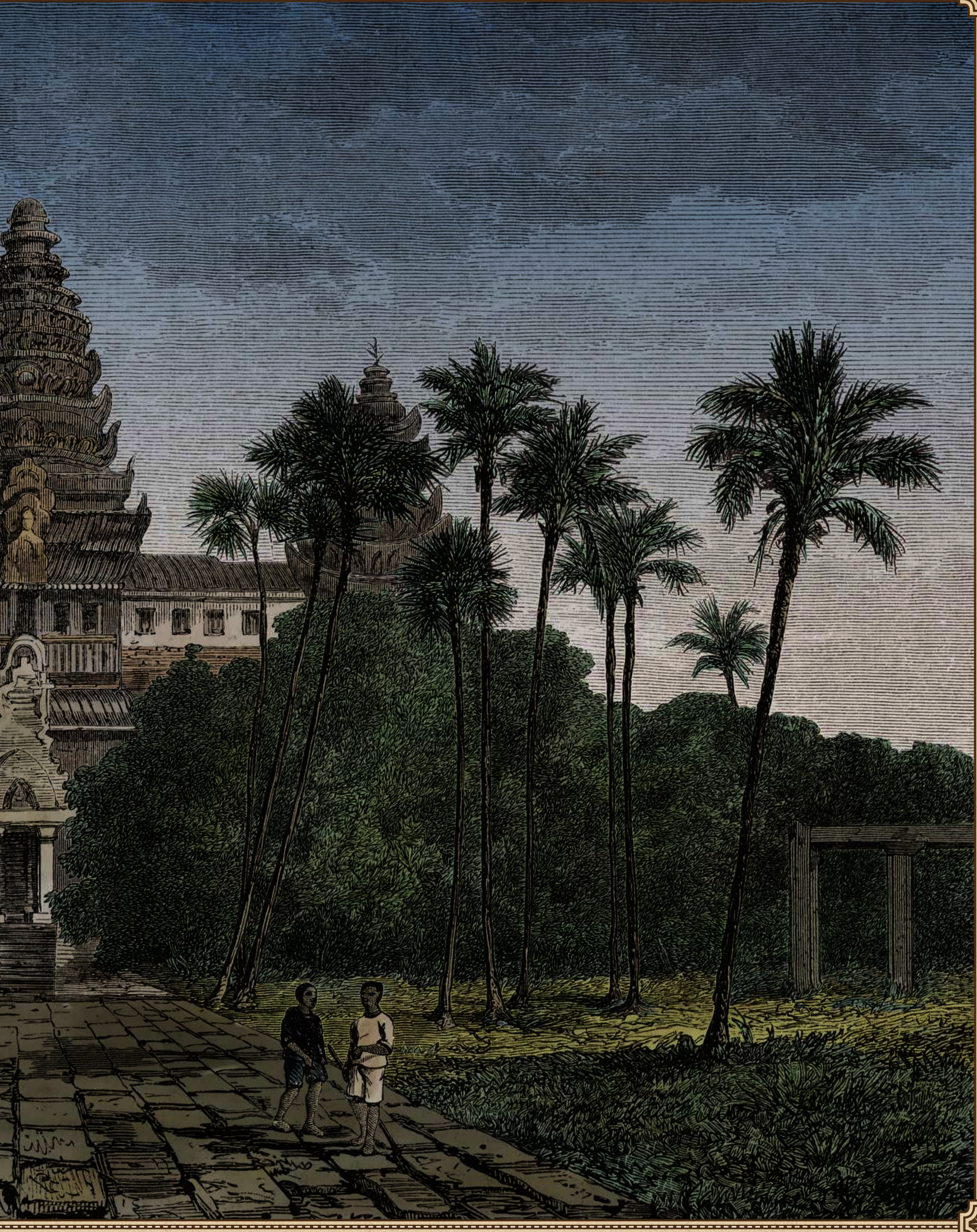
A smiling Buddha figure carved in stone in Angkor Wat

© Thinkstock



The entrance to Angkor Wat

This sketch by Henri Mouhot depicts the road leading to Angkor Wat. Mouhot wasn't the first westerner to discover the city, but he was the first to write about it and draw it in detail. In his posthumous book, he described it as being "grander than anything left behind by Greece or Rome."



© Getty Images

GREAT ZIMBABWE

This lost African city is thought to have been a wealthy and influential part of an important trading network on the medieval Swahili Coast

ZIMBABWE
GREAT ZIMBABWE MONUMENT

When Great Zimbabwe was unearthed in the late 19th century in what was soon to become Southern Rhodesia (also referred to as South Zambezia), neither the German explorers who discovered it nor many academics really believed that Africans in the medieval period were capable of building such a feat. The inherent racism at the height of British domination over the continent led first to the initial belief that the city was linked to the biblical figures of King Solomon and the Queen of Sheba, and then to the assumption that the city must have been constructed by immigrant settlers from Arabia and the Middle East.

In fact, Great Zimbabwe was believed to have been constructed around the 11th century and inhabited until the 15th century by the Shona-Bantu people, native of Africa.

Great Zimbabwe, from whence the modern state takes its name, is thought to be a contracted word, from *dzimba-dza-mabwe*, which means 'houses of stone', though archaeologist PS Garlake thought "it might be better derived from *dzimba woye*, meaning venerated houses." The word may first have been used just for the houses of the chiefs or senior members of the tribe but, then came to have been applied to all of the houses in the ruins.

Great Zimbabwe lies 30.5 kilometres south east of Masvingo and around 322 kilometres south of Harare. The towering walls of Great Zimbabwe – which surround the Great Enclosure, one of the largest ancient structures in sub-Saharan Africa – are six metres wide at the bottom, span 11 metres from the ground at their highest point and are

Globalisation and the Middle Ages

We often think about the Middle Ages as a period when people stayed within the confines of their local town or area. Indeed, travel was much more challenging than it would become in the later Early Modern period. But that is not to say there was no travel in the Middle Ages. Universities in the Middle Ages at Bologna, Paris and Oxford were abundant with foreign students and scholars from across Europe, and there was even a school at Toledo as early as the 11th century, specialising in the translation and tuition of Arabic texts. European explorers like Marco Polo had also ventured as far as the Mongol court of the Khans in the 13th century, while contact between North Africa and Europe had been established in the Roman era.

Often, however, it is easy to fall into the trap of viewing the world from European eyes when in fact there is lots of evidence that non-European communities, including the great Shona kingdoms like Great Zimbabwe, were trading and had built their own connections with China, India and the Arabic kingdoms.

The Swahili coast in particular was a melting pot of ideas and commerce. Towns such as Kilwa Kisiwani and the Kingdom of Mapungubwe appeared to have formed somewhat of a trading hub or network with Great Zimbabwe across the region, with archaeological evidence suggesting there were strong connections between them. The influence of Arabic culture can be seen in Kilwa architecture, and it is also thought that in order to shore up their legitimacy, Kilwa legend falsely told that the settlement was founded by Arabic people.

One of the recent finds in Great Zimbabwe is a Chinese porcelain dish from the Ming dynasty. Archaeologists have, rather surprisingly, dated it to the 16th century, which could suggest the settlement was not abandoned at the time the Portuguese visited. However, this does raise questions about why 16th-century Portuguese visitors described the city as ruined.

The famous Hereford Mappa Mundi, a medieval map of the world, with Jerusalem at the centre and Africa to the north east. An interactive version is available at themappamundi.co.uk

composed of nearly one million stones. They are not only a testament to the people who built them, but also reveal the enormous wealth and prestige of the city.

Great Zimbabwe was the capital of a kingdom of the same name, which covered most of the modern-day state as well as parts of neighbouring countries, stretching from the Zambezi river to the Limpopo River in the south. The Great Enclosure is the name given to the walled town or city itself, but is in fact surrounded by the ruins of settlements spread over 7.22 square kilometres, including a hill complex and a valley complex, which would have been able to house up to 18,000 people.

One of the greatest marvels of the Great Enclosure – and also the most iconic – is the Conical Tower, which at ten metres tall sits between two of the great towering walls. In post-colonial Zimbabwe, it has become a famous symbol as the logo of President Emmerson Mnangagwa's ruling Zanu-PF party, as well as the central image on banknotes and coins.

There are many theories as to the purpose of the Conical Tower. Richard Wade of the Nkwe Ridge Observatory Institute in Pretoria claims that the entire site might have acted a bit like Stonehenge, and that the tower itself could have been an observatory that was designed to view the explosion of a supernova in the constellation of Vela. The explosion happened around 11,000-12,000 years ago but the light would only have reached Earth around 700-800 years ago.

The reason for the complexity and vastness of the kingdom may well have been because it is believed the Shona inhabitations controlled the lucrative gold mines of the Zimbabwean plateau.

Traditional huts outside the ruins of Great Zimbabwe

Indeed, found at the settlement was an array of golden jewellery.

That gold was probably then taken to other settlements on the Swahili coast, most notably Kilwa Kisiwan, but also the Kingdom of Mapungubwe, where golden rhinos were found buried in the royal tombs.

This gold was then traded with China, India and the Middle East, turning East Africa into an important medieval trading post.

Although the walls and some of the structures were made from stone, many of the houses found in Great Zimbabwe were in the daga style, which was a simple mud and thatch construction. Later on, the walls would connect to the daga houses to form courtyards.

Many archaeologists have concluded from the wealth of the city that Great Zimbabwe was a rigidly hierarchical society. They point to the few huts

within the Enclosure itself, with those outside being more tightly packed and cramped.

It has also been suggested that only the finest cuts of meats were eaten inside the Enclosure, leading to suggestions by authors Martin Hall and Rebecca Stefoff that those ordinary citizens living on the outside voluntarily handed over their meat to the 'powerful and privileged class'.

Other historians have theorised that women lived below the hill while only men lived in the Great Enclosure, and that the walls were so high, not necessarily to keep out invaders, but to stop the lower classes – who lived outside – peering inside at the private lives of the rich and royal.

Nestled in between the tightly packed curved walls of the Great Enclosure were also lots of passage ways for getting around. There are many theories about what these may have been used for. Perhaps they were a way of managing the flow and traffic of the settlement, to make it easier to get around, but another, much more intriguing theory is that the passageways played into the hierarchical nature of Great Zimbabwe. Different classes of people within the Great Enclosure may have used different passages to get around.

At its height during the 14th century, Great Zimbabwe, including the Great Enclosure, Hill Complex and surrounding ruins, were home to 10,000-20,000 people, though historian Gus Casely-Hayford suggests it may have been as high as 25,000. To put that into perspective, the poll tax returns of 1377 suggest London had a population of about 40,000 but the two next biggest towns – York, the capital of the north; and Bristol, the great trading port in the south – only had populations of about 10,000, half of that of Great Zimbabwe.

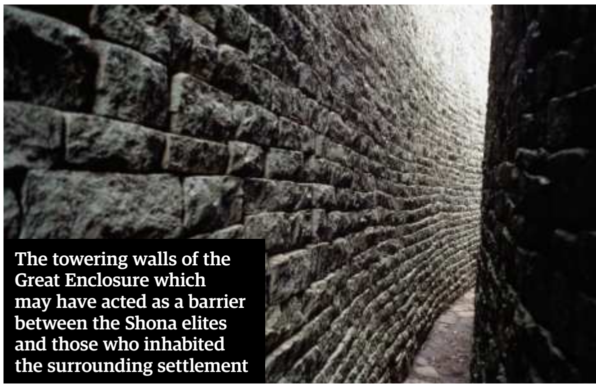
Although Great Zimbabwe had a large population, only 200-300 people seemed to have lived in the Great Enclosure, perhaps further evidence that the Enclosure was the home of the elite.

So, who were the people who occupied this city? The Shona people were and remain the largest grouping in Zimbabwe, and their language, also called Shona, is still widely spoken. They are known for farming, ironwork, pottery and music. Integral to their culture is their spiritual relationship with their ancestors. This emphasis on the past has been instrumental in the passing down of information through generations, and explains how researchers have been able to piece together even the small amounts of information we have about Great Zimbabwe.

The city appears to have gone into decline some time around the end of the 15th century. Archaeologists like Webber Ndoro have suggested this may have been because of the sheer number of people who lived there, and the impact this eventually had on the local ecosystem. This would make sense, as we know that cattle played quite an important part in the culture. It may later have been used as a religious site, but by the time Portuguese colonists arrived in the 16th century, it had been abandoned.

After the Portuguese, it wasn't until the 19th century that Europeans discovered Great Zimbabwe again. A German trader found the ruins and then showed them to his friend, explorer and geographer Karl Mauch, some years later.

> "Different classes of people may have used different passages to get around"



The towering walls of the Great Enclosure which may have acted as a barrier between the Shona elites and those who inhabited the surrounding settlement

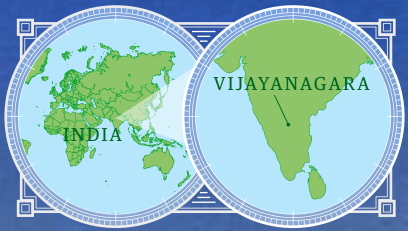
Another view of the Conical Tower set among the ruins. Here you can see the intertwining nature of the walls and structures, which have come to be known as the Great Enclosure

The ruins of a fort at Great Zimbabwe are quite striking from such a high angle

© Getty Images, Manus Loots

VIJAYANAGARA

Once the capital of a mighty empire, centuries of conflict and pillaging laid waste to the magnificent landscape of Vijayanagara, the so-called City of Victory



For those who lived in Vijayanagara, the capital of the Hindu Vijayanagara empire, life was good. A city of wealth, glamour and influence, for generations it was one of the most breathtaking locations in the subcontinent.

Vijayanagara's sacred history goes back into the mists of time, long before the age of the empire that made its capital there. At the centre of the city lies an area known as Hampi, which existed as a sacred site as early as 2 BCE, as artefacts unearthed there have proven. Located on the banks of the Tungabhadra River, Hampi was a place of pilgrimage where travellers would rest on the road and pay their respects at the religious monuments there. That site of pilgrimage grew over the years into a centre of Hindu teaching until, in the 12th century, the Hindu kings made their homes there.

With its strategically attractive position on the river, not to mention the regular traffic promised by the regular pilgrims who flocked there, it was only a matter of time before the area grew even more. That happened in the 14th century when Harihara I and Bukka, the rulers of Vijayanagara empire, established it as the capital city of their empire. Given this stamp of approval, the city began to grow at a breathtaking rate until, by 1500 CE, it was second only to Beijing in size, with a population of around half a million people.

As the city grew, so too did its wealth. It became an important mercantile centre with traders travelling from the corners of the empire to exploit the opportunities offered by its sheer size. Today, archaeological traces remain that show the unique layout of the 60-mile Vijayanagara site, and give a valuable insight into the look of the city when it

was at its most magnificent. At a time when many of the southern Indian capitals were traditionally formed of loosely connected settlements and government buildings, this was the first time that a southern Indian city had been sectioned out during construction.

Vijayanagara was constructed of seven fortified layers, with each of them built to contain a different important aspect of life. At the centre of these fortifications, heavily protected, was the palace and administrative heart of the city. Wide roadways traversed the sections to enable chariot traffic, while public amenities – including water tanks, sites for communal gathering and places of worship – were commonplace

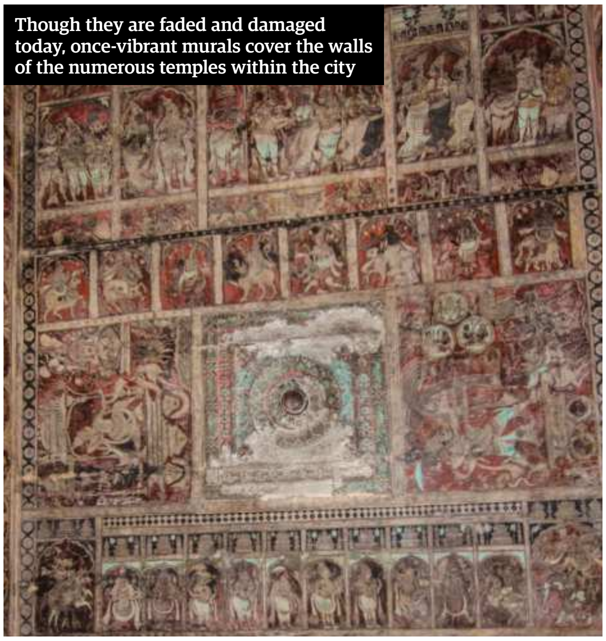
Contained within the first to third layer of fortifications was agricultural land at the outside, followed by gardens and, finally, residential buildings. They were lush and verdant, and both agricultural land and homes were served by water that was taken from several lakes. These layers not only provided residents with their 'suburbs', but the flourishing gardens and orchards also proved an attractive first impression for visitors entering Vijayanagara. In the next, between the fourth and seventh layers was the commercial centre of the city. This contained hundreds of shops, bazaars and markets from which travellers and merchants from across the globe could be found. Legends claim that gemstones could be purchased by the dozen from the side of the road in the prosperous city, but it's unknown if this is accurate. It's certainly true the vast bazaars were as close as the early traveller could get to a shopping mall. There were seven bazaars, each hosting on a market on a different day of the week. When the markets weren't open, the bazaars became important social spaces, hosting festivals and fairs to entertain the public.

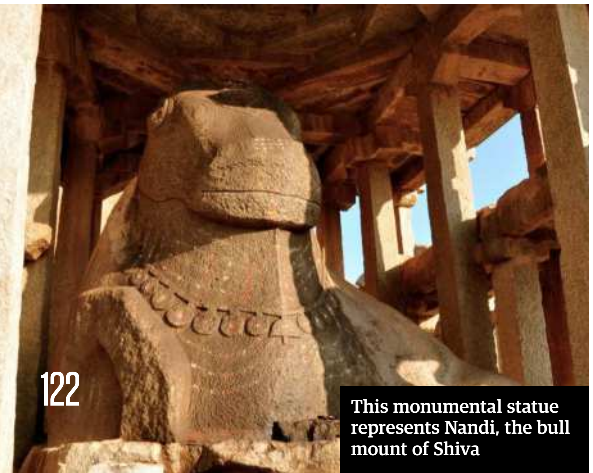
Beyond the market region stood the seventh fortified lines, and within this ring of defence were the buildings considered most vital to Vijayanagara: government structures, temples and the royal palace. It was a city laid out by architects who clearly understood the importance of protecting these vital establishments, and all were served by an aqueduct-fed water supply that predates Vijayanagara, and is believed to have been initially established as early as the 9th century. Although the City of Victory was lauded as a place of beauty and strength, as history shall tell, the fortifications didn't prove daunting enough.

Vijayanagara wasn't only a place of wealth, but of spiritual enlightenment too. The rulers of the empire placed a great emphasis on education and philosophy, and encouraged their subjects to do likewise. Their subjects were also encouraged to pay taxes that paid for their city, and visitors were welcomed with open arms, as the rulers recognised that this would be an excellent way to ensure that word spread of how good a place Vijayanagara was to do business with, meaning merchants would head there and bypass neighbouring cities. Under the empire's most famed ruler, Krishnadevaraya, Vijayanagara reached its peak. European visitors to the city were frequent, and he made a strong alliance with the Portuguese settlers in Goa, utilising their expertise to work on Vijayanagara's ageing waterworks. He sat at the head of a heavily regulated government in which corruption was harshly punished, and he brought this same sense of law and order to his whole empire, which he regularly toured to meet the people. For those in Vijayanagara who didn't share in the wealth, Krishnadevaraya established a system of land leasing, and provided agricultural areas with fresh water. This, he hoped, would enable even the poorest to make their own living.

> "At the centre was the palace and administrative heart of the city"

This shrine in the form of a stone chariot marks the entrance to the Vitthala temple complex. It represents the Garuda, the chariot of Vishnu


Though they are faded and damaged today, once-vibrant murals cover the walls of the numerous temples within the city


This monumental statue represents Nandi, the bull mount of Shiva

In 1868, British photographer and former soldier Edmund David Lyon established himself in southern India, and catalogued the ruins of Hampi

Krishnadevaraya died in 1529 and without him, the stability of Vijayanagara seemed to suffer significantly. The empire had been engaged in a long conflict with the powerful Muslim Bahamani Sultanate, and in 1565 CE, it suffered a shocking and brutal defeat. Vijayanagaran leaders were beheaded, and the armies of the Sultanate laid waste to the opulent capital city, looting and burning it over a period of months. Those citizens who survived fled, and Vijayanagara – once the capital of a mighty empire – was left to fall into ruin.

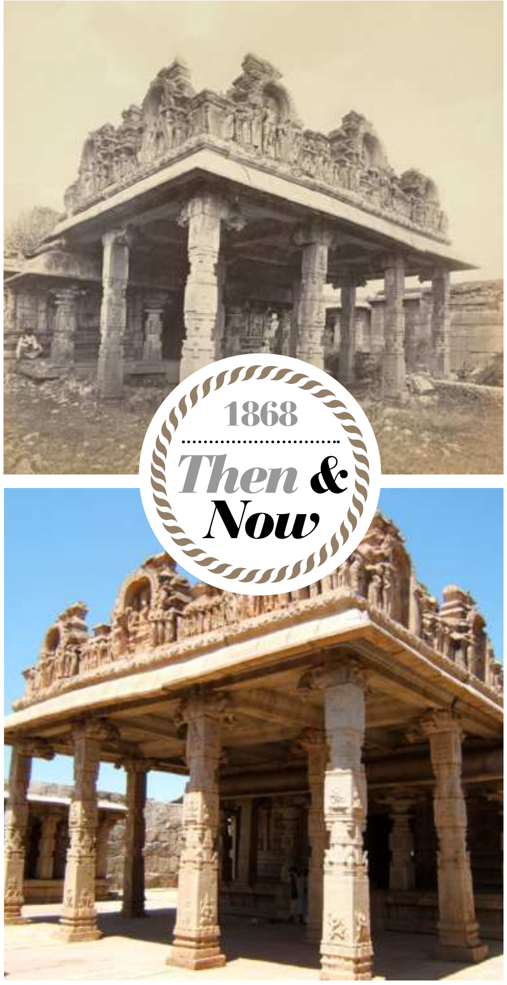
For two centuries, few lived in Vijayanagara besides the odd hardy farmer and assortments of wild animals, but in 1799, the silent city welcomed Scottish antiquarian Colin Mackenzie. Later the surveyor general of India, Mackenzie painstakingly mapped out the site and aroused western curiosity in a city that had seemingly been forgotten by those same European travellers who had once wrote paeans to its beauty. The site caught the interest of many travellers, and by the early 20th century, efforts were being made to excavate and preserve the remains of Vijayanagara by India's Archaeological Survey Office.

> Colin Mackenzie, a Scottish army officer in the British East India Company, became the first surveyor general of India

Bit by bit, Vijayanagara emerged from the past as archaeologists worked with painstaking precision to reveal the buildings that had once stood within the fortified walls. With guards patrolling the site, there were defences in place against looting, not always successfully, and it wasn't long before some of the ruined temples became places of pilgrimage again. In these cases, restorers attempted to secure the safety of the buildings that were attracting the most attention, and in some cases, crumbling monuments were actually dismantled and then rebuilt from their original stones, bit by bit.

Interest in Vijayanagara has remained constant ever since then. Archaeologists have come from across the world to work with the Indian authorities on the mapping and preservation of the site, and the Hampi district is now a UNESCO World Heritage Site. The majority of the sacred monuments in this area are now considered to be in a good state of preservation, having once been regarded by UNESCO as 'at risk'. Now the focus is on their maintenance as visitor numbers to the area increase. Happily, it seems that this once-lost city is in safe hands.

In a city famed for its wealth, even the quarters of working and ceremonial animals were built to inspire awe



The Hampi Monuments

The Group of Monuments of Hampi, listed by UNESCO, is a collection of monuments that are considered to be of particular importance to the history of worship in southern India. Among these are the Krishna, Achyutaraya, Vitthala, Pattabhirama and Lotus Mahal temple complexes. These offer an awe-inspiring insight into the lost Vijayanagaran empire and the importance of faith to its people.

The Vitthala temple, in particular, is representative of the pinnacle of Vijayanagaran architecture, and remains remarkably ornate even today, offering a glimpse of the contemporary appearance of this magnificent city. It retains elements of decoration and scale that suggest an enormous and opulent structure, while the remaining temple outbuildings show that it wasn't only a ceremonial building, but a working one too.

Unique to Hampi are streets that surround the temples, and they are wide enough to allow chariots to pass through unimpeded. These are believed to be indicative that chariot festivals once took place as part of a religious ritual.

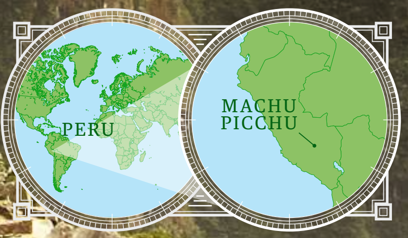
With more than 140 religious sites throughout the city, this is a city in which the old and – at the time – modern met. In addition to those buildings constructed by the Vijayanagarans, there are older, sacred sites here too, and ongoing excavations continue to unearth artefacts that, at the present time, date back as far as the 2nd century BCE, suggesting that this has been a centre of human habitation for far longer than the Vijayanagaran empire existed. So far artefacts have included evidence of ancient dwellings, rock art and even megalithic cemeteries. They offer a tantalising glimpse of a world that, long since lost and forgotten, is now beginning to emerge into the light once more.

Virupaksha Temple from the top of Hemakuta Hill in Hampi

© Wiki: AchintB, Apadegal, Ashwin Kumar, Edmund David Lyon, Ilya Mauter, Robert Helvie, Sarah Welch, Tania Dey

MACHU PICCHU

Emperors, high priests, virgins, mummies, fortune hunters – Machu Picchu's story is an intriguing one. Incredibly, it is also a puzzle yet to be solved



Perched high on a grassed peak, shrouded by the Peruvian cloud jungle, Machu Picchu has been added to an increasing number of people's must-see travel lists. This impressive archaeological site is one of the only Inca constructions left largely undestroyed by time or the Spanish conquest, and is a living testimony to the engineering ingenuity that its inhabitants possessed. But within its impeccable ruins lie mysteries waiting to be solved. The questions of why it was built, who lived there and how they built with such complex methods can be explored when you visit – if you know where to look.

The Inca civilisation began around 1100 or 1200 and lasted until the Spanish conquest in 1532. They first came to power in Peru and, under the emperor known as Pachacutec or Pachacuti (1438-71), they further expanded, creating an empire that included parts of Ecuador, Peru, Bolivia, Argentina and Chile.

While there is agreement on when the site at Machu Picchu was built – in the mid-1400s – and by who, it can still not be said with complete certainty what its purpose was. The Inca had no form of written communication, and used quipu – counting devices made using coloured yarn and tying knots in a specific sequence – for counting and keeping track of such things as inventory. There is no evidence that these were used to record narratives, though this may be due in part to the fact that relatively few quipu survived.

With no written language, there were no existing histories of the Inca before the Spanish arrived. All the accounts that we have regarding the Inca past were written either by the Spanish or by writers who were half-Spanish and half-Quechua.

Machu Picchu is both a cultural and natural UNESCO World Heritage Site

In addition, the writings were often based on an oral history that could have been mutated by the passing down of stories.

However, Carlos Velaochaga, a Peruvian anthropologist specialising in cultural anthropology, has dedicated the last 30 years to investigating Inca religion in the Andes and believes that, "The myths and legends passed down in the Inca oral tradition may provide us with some of the best clues about them. Although written in allegorical fashion, they may well contain some important facts."

So, what are the explanations derived from these clues that have been, or are now, most often cited as to the site's purpose? Although it might seem somewhat frustrating that we can't know, this also gives you an opportunity to see which theory makes the most sense to you, or make your own.

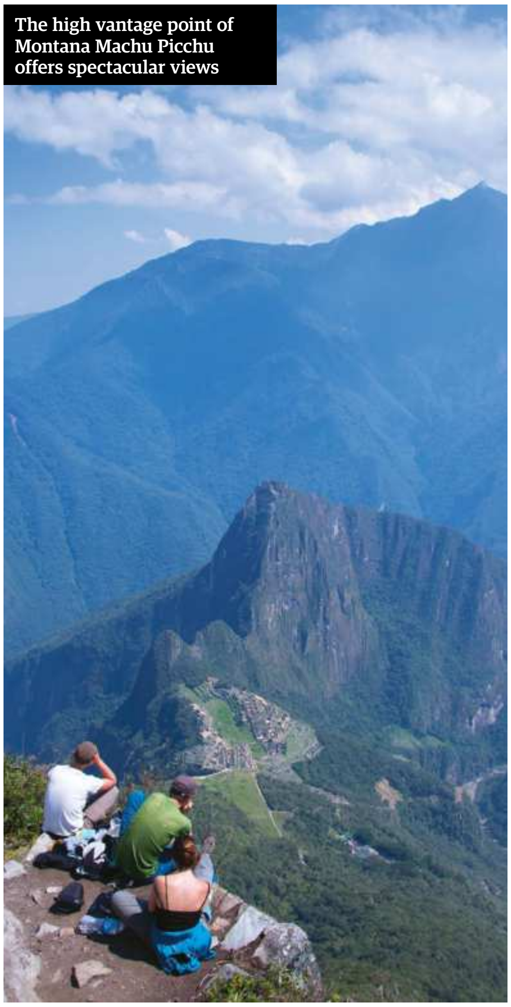
When we take a look at the archaeological evidence that has been uncovered at Machu Picchu, one thing is certain. The Spanish never came across this site, as it was found largely intact when Hiram Bingham documented his expedition there in 1911. Just as clear, however, is that it was abandoned by those who lived there, the reason for which presents us with another mystery.

The emperor Pachacutec died around 1471 and was succeeded by his son Topa Yupanqui and then by his grandson, Huayna Capac. The death of Huayna Capac ended in a rivalry between his two sons, Huáscar, who took over in Cusco, and Atahualpa, who was ruling the northern part of the empire from Quito in Ecuador. This civil war weakened the Inca empire and helped create the circumstances in which the Spanish conquistadors took over the empire.

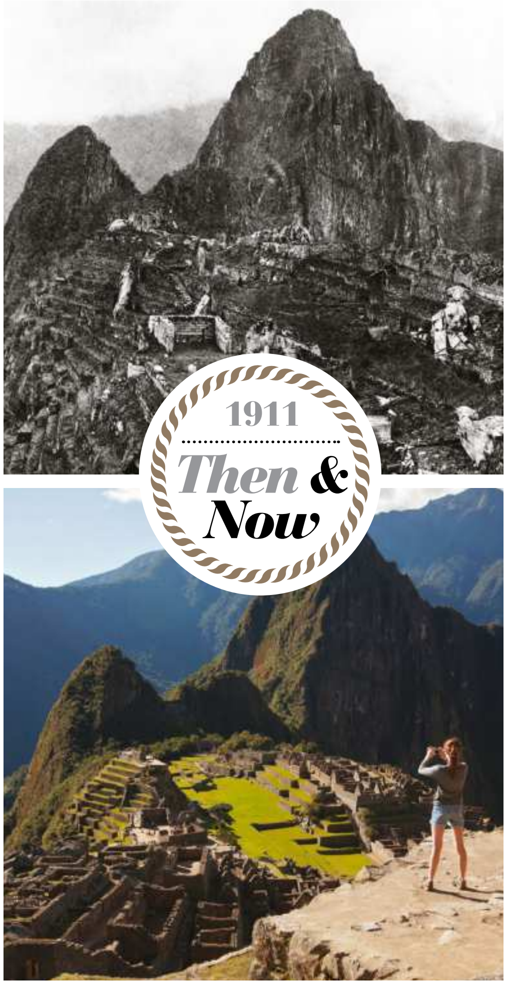
After an uneasy coexistence, with the Spanish firmly in power in Cusco, the de facto Inca ruler, Manco Inca, escaped with his family and followers to Vilcabamba, where he established his last stronghold. They held out for eight years before the Spanish were finally able to defeat them.

It was actually this lost city of Vilcabamba that Hiram Bingham set out to find on his expedition in 1911. Although the area that Machu Picchu was found in did not match the location described for Vilcabamba, Bingham was convinced that the site could only be that "Lost City of the Incas." But he was not the first to find Machu Picchu. Locals knew

Locals knew of Machu Picchu's existence before it was officially rediscovered, as they had located its ruins



The high vantage point of Montana Machu Picchu offers spectacular views



EXPLORING THE THEORIES

Why was Machu Picchu built?

The theories of why Machu Picchu was built and abandoned have been pieced together from archaeological evidence, chronicles and cultural understanding of the Inca people. It is widely accepted that it was, at the very least, an estate for Pachacutec. Whether this may have included some of the other theories is not known. Given they seem to have been quite a practical people, it seems reasonable to think a place this size would not have been used for one purpose alone.

Religious centre

When the mummies that Bingham discovered were first analysed, it was believed that they were almost entirely women. This led to the theory that they were Virgins of the Sun and this, combined with the many temples on the site, gave it religious significance.

Fortress to defend water

Although it may seem that the ruins at Machu Picchu are situated in a fairly remote location to us now, Machu Picchu would have been a strategic location in its day, necessary as it would have been in the midst of several towns, and close to some antagonistic tribes.

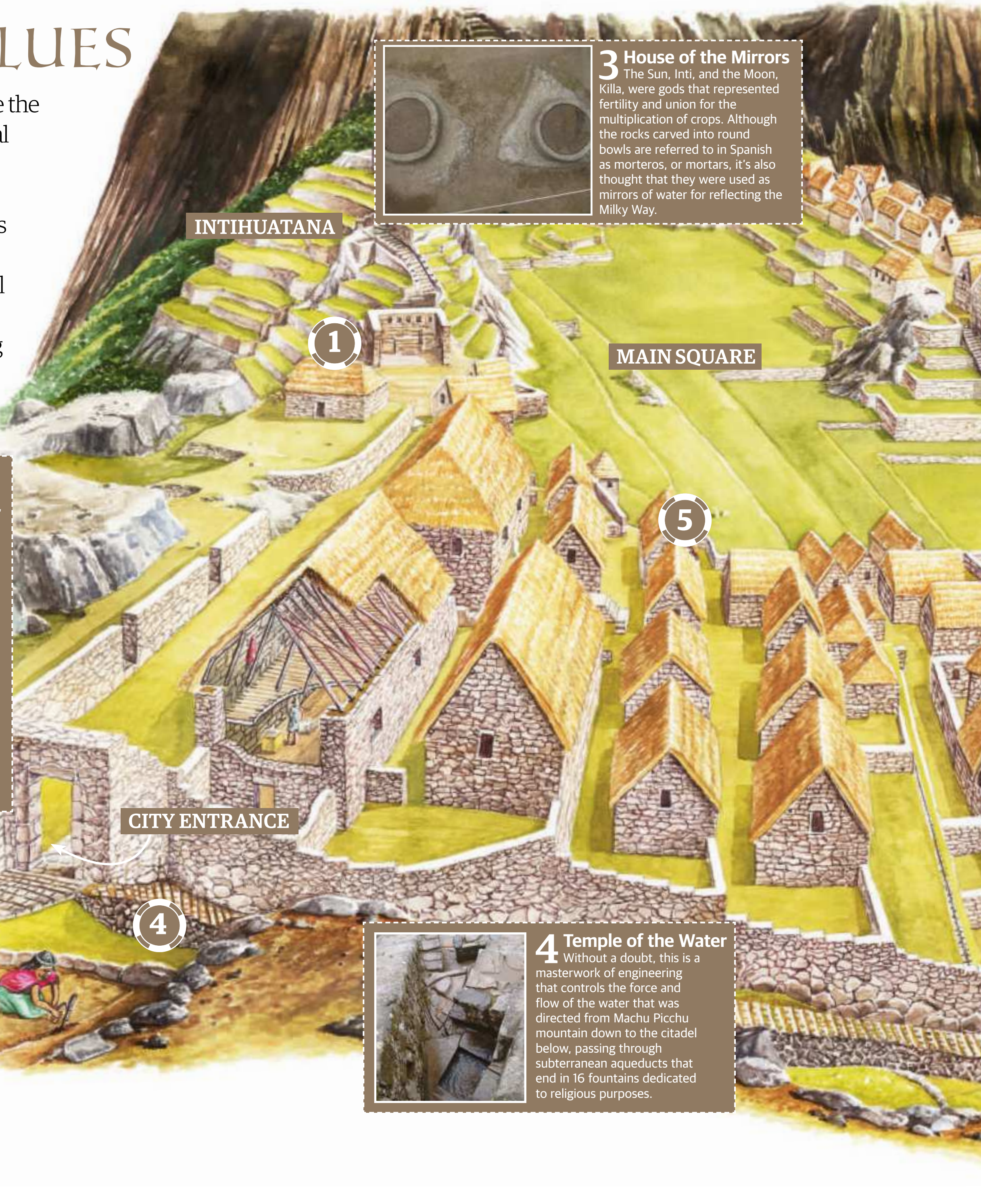
Royal estate

It was fairly common for the Inca ruler of the time to have his own personal estate constructed. As the greatest leader that the Inca had and were to ever know, it stands to reason that Pachacutec would have ordered the construction of the most impressive one of all.

THE KEY CLUES

Much of what has been found are the typical items of daily use at a royal estate such as this. It is actually the buildings of Machu Picchu themselves, and the various areas of the site, that provide many clues that, coupled with historical chronicles, help us understand the purposes behind the building of Machu Picchu. Here's where you can find them

1 Temple of the Three Windows The windows relate to the division of the Andean world into three parts: the Hanaq Pacha (upper world), Kay Pacha (middle world), and the Ukhu Pacha (lower world). The temple is aligned to connect with the time of the dead, the living, and the future.



3 House of the Mirrors The Sun, Inti, and the Moon, Killa, were gods that represented fertility and union for the multiplication of crops. Although the rocks carved into round bowls are referred to in Spanish as morteros, or mortars, it's also thought that they were used as mirrors of water for reflecting the Milky Way.

4 Temple of the Water Without a doubt, this is a masterwork of engineering that controls the force and flow of the water that was directed from Machu Picchu mountain down to the citadel below, passing through subterranean aqueducts that end in 16 fountains dedicated to religious purposes.

Why was Machu Picchu abandoned?

We know its residents did abandon Machu Picchu largely because the Spanish never found it as well as the fact that, as best we can tell, no great riches were ever found there. It is not certain why, however. Among the possibilities are because disease, brought by the Spanish, killed the inhabitants; that because of the Spanish, supplies were unable to reach it; or that it was abandoned so that the Spanish would not find it.

Emperor's mausoleum

Sometimes cited as a separate theory, it was also common that the Inca ruler's personal estate would become his mausoleum upon death. A Spanish chronicler, however, Juan Diez de Betanzos, stated that his resting place was actually in Cusco.

Inside what remains of the mausoleum building at Machu Picchu

Purposeful abandonment

Given the religious significance of the site, once the Spanish conquest was under way, it may have been abandoned, rather than risk its destruction by the conquistadors. It was likely largely left unmanned since the death of Pachacutec anyway.

Lack of supplies

Although there were some crops being grown at Machu Picchu, there was likely not enough varied supplies to properly provide for the people living there. Once the Spanish took over the Cusco region, there would have been no way for the supplies to reach the site.

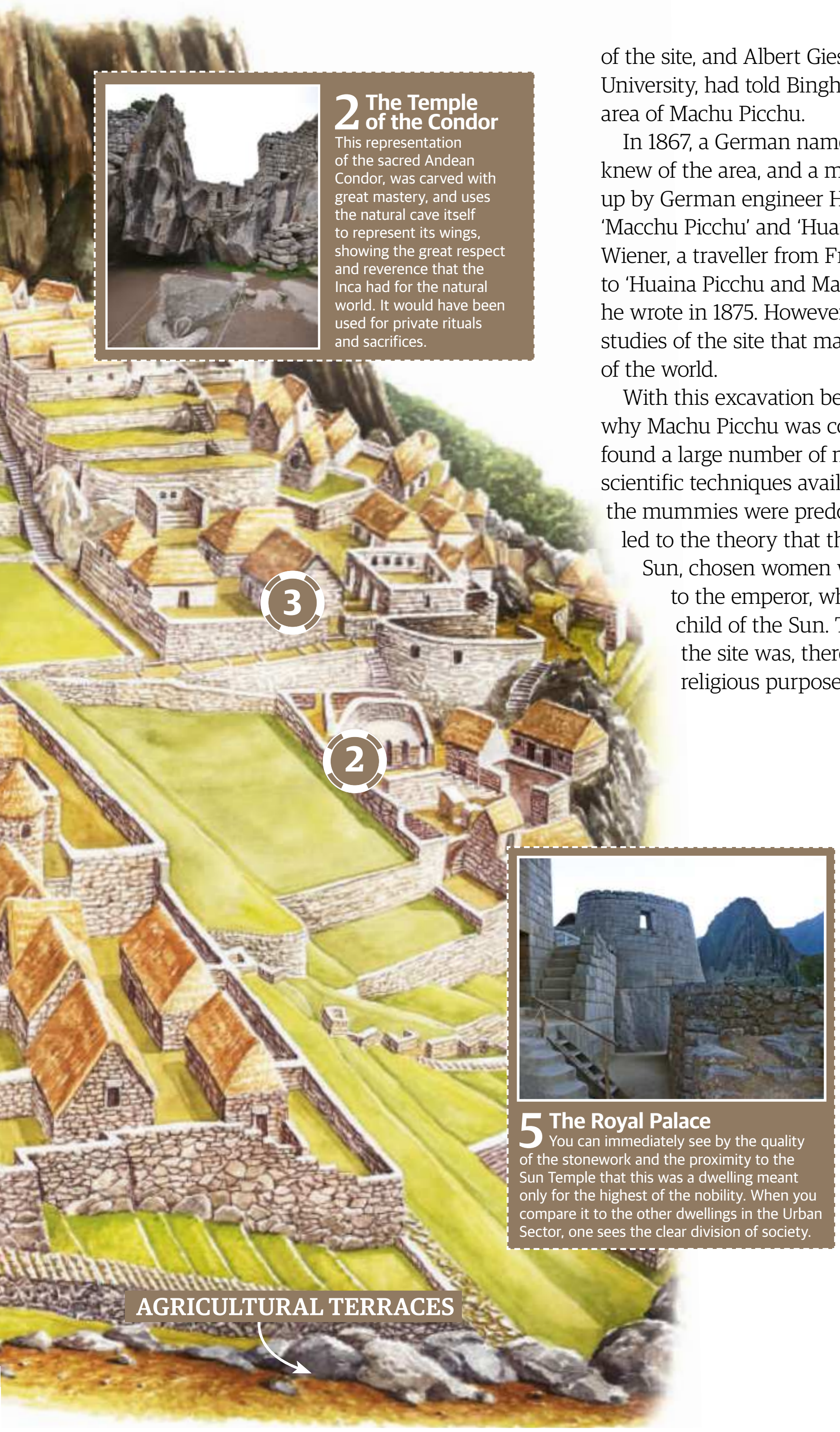
of the site, and Albert Giesecke, the rector of Cusco University, had told Bingham about ruins in the area of Machu Picchu.

In 1867, a German named Augusto Berns also knew of the area, and a map from that year drawn up by German engineer Herman Göhring showed 'Macchu Picchu' and 'Huaina Picchu'. Charles Wiener, a traveller from France, made reference to 'Huaina Picchu and Matcho Picchu' in a book he wrote in 1875. However, it was Bingham's studies of the site that made it known to the rest of the world.

With this excavation began the theories about why Machu Picchu was constructed. Bingham found a large number of mummies, and with the scientific techniques available, it was believed that the mummies were predominantly women. This led to the theory that they were Virgins of the Sun, chosen women who dedicated their lives to the emperor, who was believed to be the child of the Sun. The first theory about the site was, therefore, that it was built for religious purposes.

Another point in favour of this theory was the presence of several temples (these could be identified by the stonework used when building them). The Inca constructed their buildings using stone, and employed different techniques depending on the purpose of the building. Their finest techniques were reserved for temples and palaces. Actually, as the emperor was considered to be a god, both temples and palaces would be sacred. This finer building was done by chiselling huge white granite without the use of iron tools. This type of rock is difficult to work as it is hard, and contains 60 per cent quartz. The blocks were cut and finished so perfectly that they fit together without the use of mortar. This technique still cannot be duplicated using the techniques and materials known to be available at that time.

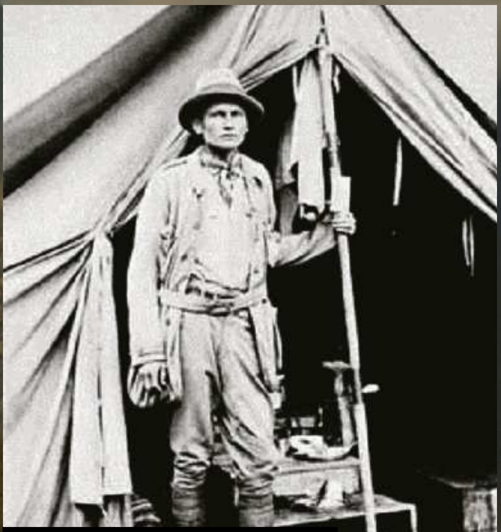
Even if they weren't labelled with this stonework, it's easy to mark the sacred sites as you walk through Machu Picchu. You will also see structures that are made from other, not so fine, building techniques. Paying attention to the building techniques is one way to get a feel for the social



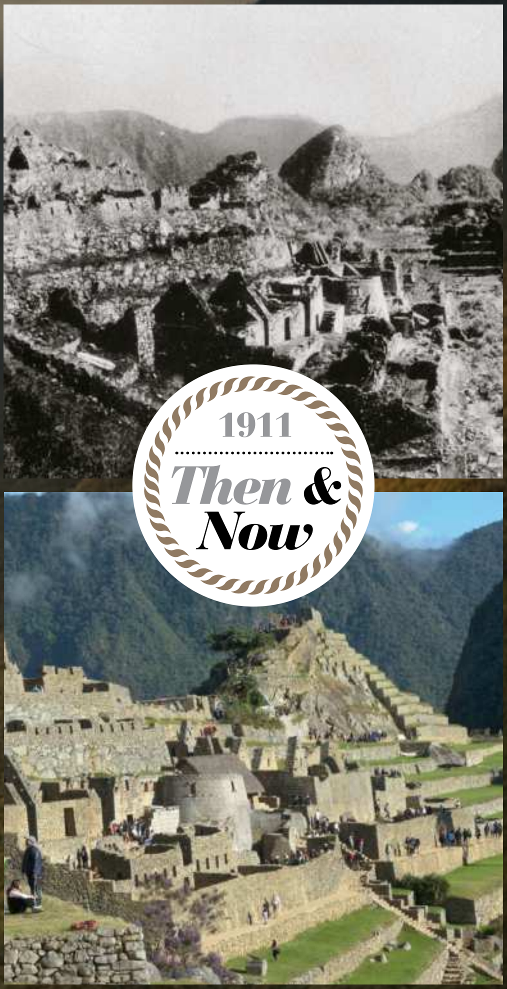
2 The Temple of the Condor
This representation of the sacred Andean Condor, was carved with great mastery, and uses the natural cave itself to represent its wings, showing the great respect and reverence that the Inca had for the natural world. It would have been used for private rituals and sacrifices.

5 The Royal Palace
You can immediately see by the quality of the stonework and the proximity to the Sun Temple that this was a dwelling meant only for the highest of the nobility. When you compare it to the other dwellings in the Urban Sector, one sees the clear division of society.

> "It's easy to mark the sacred sites as you walk through Machu Picchu"



Hiram Bingham, whose expedition to Machu Picchu in 1911 sparked new interest and findings



structure of the times, which was very definitely class-based. A great place to do this is to stand by the Sun Temple, with its beautiful curved wall, and look down toward the Urban Sector.

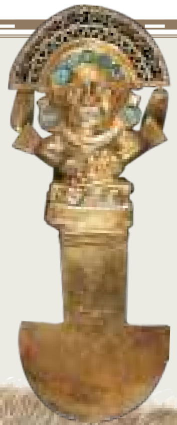
Although later research with more modern forensic science asserted that the mummies Bingham found were actually fairly evenly split between men and women, he was not necessarily wrong about the religious significance of the site. Nor are the other theories of the site as an administrative centre, a royal estate, or a mausoleum necessarily wrong.

Emperor Pachacutec had made a habit of building estates in the areas where there were tribes that he had conquered. Prior to Machu Picchu, he had done this in Pisac and in Ollantaytambo in the Sacred Valley outside of Cusco. It makes sense that he might do so in the area of Machu Picchu where he had also successfully conquered the local tribes.

Yieber Cueva Lucana has been working as a licensed tour guide in Cusco and the surrounding area for more than 12 years. Like Velaochaga, he too finds that listening to stories told by his family has provided him with a deeper understanding of the culture than his degree in tourism. "The Inca did nothing without first considering the religious aspects, and this is easily seen when considering the building site for Machu Picchu. First, it is surrounded by Apus, high mountains that were considered to be protective gods.

"Everyone is awed by the surrounding landscape when they come to Machu Picchu. But while you're taking pictures of it, really stop and look without your camera. You'll see breathtaking peaks everywhere you look.

The aryballos (top) and bismuth bronze dagger (bottom) are just two of the Inca treasures discovered at the site

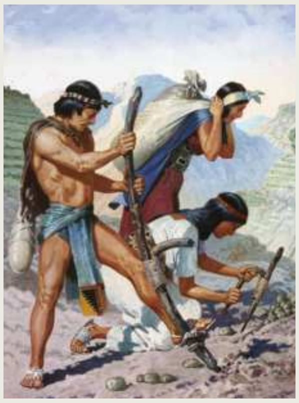


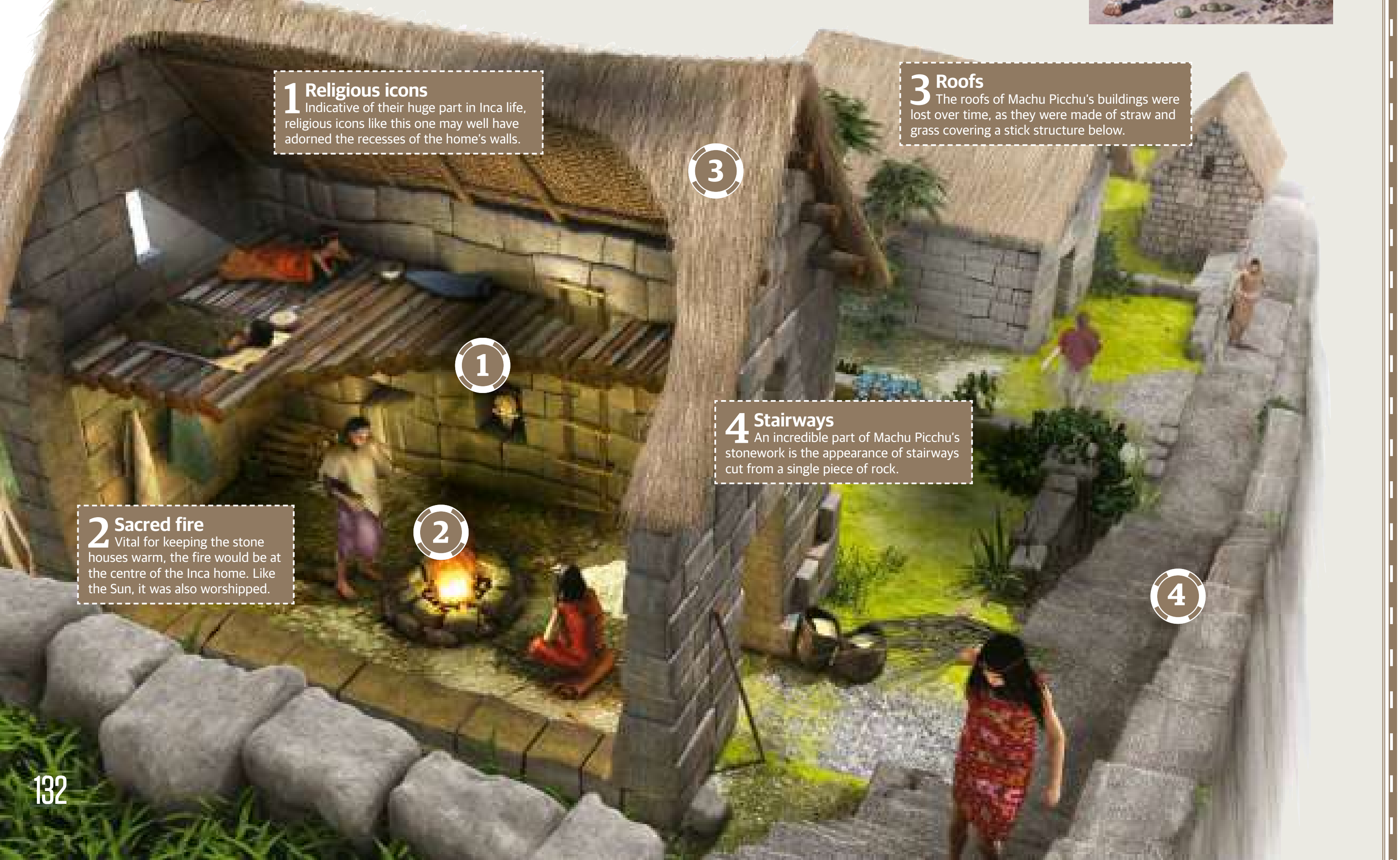
How did the Incas live?

Our knowledge of what Inca lives were like is based largely on accounts written after the Spanish conquest. In turn, these accounts were based on oral traditions that had been handed down, or on direct observation of the people themselves.

The key aspect of the Inca and Quechua people was that they were deeply religious and, with the emperor being the son of a god, devotion to him was paramount. Each person was expected to fulfil their necessary duties to the emperor, to the gods and to their families. This could take the form of military service, service according to the person's profession, or tithing part of the crops that were grown.

Service could also be expected in the form of helping to build the great constructions that the empire required. Therefore, though building a place like Machu Picchu would take years (it's estimated to have taken at least 50) and a lot of manpower, access to such a labour force was inherent in the way the government was constructed.





1 Religious icons Indicative of their huge part in Inca life, religious icons like this one may well have adorned the recesses of the home's walls.

2 Sacred fire Vital for keeping the stone houses warm, the fire would be at the centre of the Inca home. Like the Sun, it was also worshipped.

3 Roofs The roofs of Machu Picchu's buildings were lost over time, as they were made of straw and grass covering a stick structure below.

4 Stairways An incredible part of Machu Picchu's stonework is the appearance of stairways cut from a single piece of rock.

Machu Picchu's altitude and location mean that weather is never predictable, so come prepared for anything

Looking down into the Temple of the Sun, one of the best known parts of the site

This quaint bridge is part of the Inca Trail, the way by which many walkers reach the site at Machu Picchu

Children dressed in traditional Peruvian clothing look out over the ruins of the Inca city of Machu Picchu

Viewing Machu Picchu from the air offers an entirely new perspective, and shows how big the site really is

> "The Inca were able to build their temples taking the pathway of the Sun at the time of the solstices into account"

"Then, far below lies the Urubamba River. If you look down over the side you will see it snaking around the site. While all water was considered sacred, this river, which was felt to mirror the Milky Way in the Urubamba Valley, and encircles Machu Picchu like the serpent that they also considered sacred, was especially auspicious.

"Once the Inca decided to build there, they would have to consider the Sun, their primary deity. As you visit the areas of the Temple of the Three Windows, and the Temple of the Mirrors in the Urban Sector, pay attention to the directions. You will find that there are windows that face directly east, welcoming the Sun. You will also find throughout the complex niches, where mummies of revered ancestors were kept, that these face East."

It is truly remarkable the Inca were able to build their temples taking the pathway of the Sun at the time of the solstices into account. One of the windows in the Temple of the Sun and a corner of the Intihuatana is oriented directly toward the place that the Sun rises during the winter solstice. The other window of the Sun Temple is oriented toward the Sun Gate, where the sun rises on the Summer Solstice. During the solstices, the Intihuatana is oriented so perfectly that no shadow is cast.

Within Machu Picchu, in the temple area, there is a particular spot that lines up perfectly on the solstice with another sacred spot in Llactapata, a temple located on a hilltop several miles across the valley. Near the main temple you will also find a rock that represents the Southern Cross, whose corners align with the cardinal

directions and the largest mountains that surround the citadel.

That it was also the royal estate of Pachacutec is almost certain, as it was built during his reign and it was customary for the Inca to have private palaces in Cusco and elsewhere. There are Spanish records that state Pachacutec's descendants were asking for the rights to his estate at 'Piccho', and this is believed to be referring to Machu Picchu.

It was also common that such an estate would later be used as the Inca's mausoleum. There is a spot at Machu Picchu labelled as the Royal Tomb. However, this name and others used at the site were assigned by Bingham, and are not necessarily correct. Pachacutec's mummy was never found here, and is recorded as having been discovered by the Spanish in Cusco. Its final resting spot has yet to be found.

Despite all remaining uncertainties, research continues, and with each new find comes the opportunity to discover new clues about the secrets Machu Picchu may hold. Not only may new archaeological evidence come to light, but there may well be further written records archived away in Lima yet to be researched. In the meantime, though, despite the many visitors to Machu Picchu each year, you can still find yourself on a stretch of path on your own, feeling that you could be back in the time of the Inca. The lack of certainty is a rare opportunity to let your own imagination fly.

Building the city in the sky

Building Machu Picchu on the site that we see it today was possible in part due to the presence of ample amounts of granite, as the Inca built entirely from stone, with only roofs made from other materials. One of the most fascinating aspects of the Inca was their ability to construct beautiful and incredibly stable stone walls without mortar between them. To this day, it is impossible to duplicate their techniques using what we know they had at hand.

One of the most striking elements when you visit the site is the sheer size of the blocks used. In Sacsayhuaman, a site just above the city of Cusco, one of the blocks is estimated to weigh more than 100 tons. To further add to the complexity of the job, there were no metal tools to use in cutting and shaping, and no wheels to move the stones.

It is believed that a system of ropes and logs was used to roll the stones to the building site. Various techniques may have been used in the cutting, depending on the degree of finesse needed. Fire and water might have been used to split rocks, and other various types of rocks could have been used to chip away to get the shape desired. Each were painstakingly shaped so that one fit perfectly on top of another.

What has come to light in more recent years is that a great deal of the building effort actually took place below the surface in setting up layers of foundation that would allow for more stability as well as water drainage. In fact, Inca walls are generally so stable that in Cusco, where colonial buildings were often built on top of Inca palaces, there were earthquakes during which the colonial walls fell and the Inca walls stayed standing.

Amazing inca Stone work with precision and perfection as seen here on a doorway

© Alamy, Getty Images, Shutterstock, Thinkstock

Machu Picchu today

The Spanish never got to Machu Picchu during their conquest of the Americas, but it was still somehow left in ruin. Most of the buildings we see today are reconstructions built to show visitors how the settlement would have originally looked. In 2007, Machu Picchu was named one of the New Seven Wonders of the World.

© Getty Images

LOST CITIES ACROSS THE GLOBE

Through the ages, the lure of the lost city brings intrigue, romance, triumph, tragedy, discovery and rediscovery to the worldwide human experience

1

MEMPHIS

From its beginning, the city of Memphis was believed to be under the protection of Ptah, the god of craftsmen in the ancient Egyptian pantheon. Memphis was located in a commanding geographic position at the mouth of the Nile Delta, and though the exact date that is was founded is unknown, the archaeological record suggests its origins stretch back to the 31st century BCE.

Legend says that the Pharaoh Menes founded Memphis, and it became the capital of the Old Kingdom of Egypt. Memphis grew into a commercial, cultural and religious centre of the flourishing civilisation, and some of the most spectacular construction projects of the ancient world - including the famed step pyramid, the Great Temple of Ptah, the Temple of Ptah of Rameses II, and palaces occupied by the rulers of ancient Egypt for eight dynasties - are located there.

Due to the emergence of Mediterranean ports and shifting trade routes, Memphis was abandoned in the 7th century CE. Its ruins were rediscovered in 1652 by French scientist Jean de Thévenot, and archaeological exploration gained momentum following Napoleon's military expedition in the late 18th century. Much of the rediscovered city's ruins were uncovered between 1907 and 1912, but work continues. As recently as 2004, digs were underway along the great north wall of Memphis.

② KALIBANGAN

Located on the southern bank of the Ghaggar River in northwestern India, Kalibangan is recognised as a centre of the Indus Valley Civilisation and the location of the world's 'earliest attested ploughed field'. Its settlement dates to the 35th century BCE. The city was abandoned in the 19th or 20th century BCE, perhaps following a catastrophic earthquake or after its primary water source dried up.

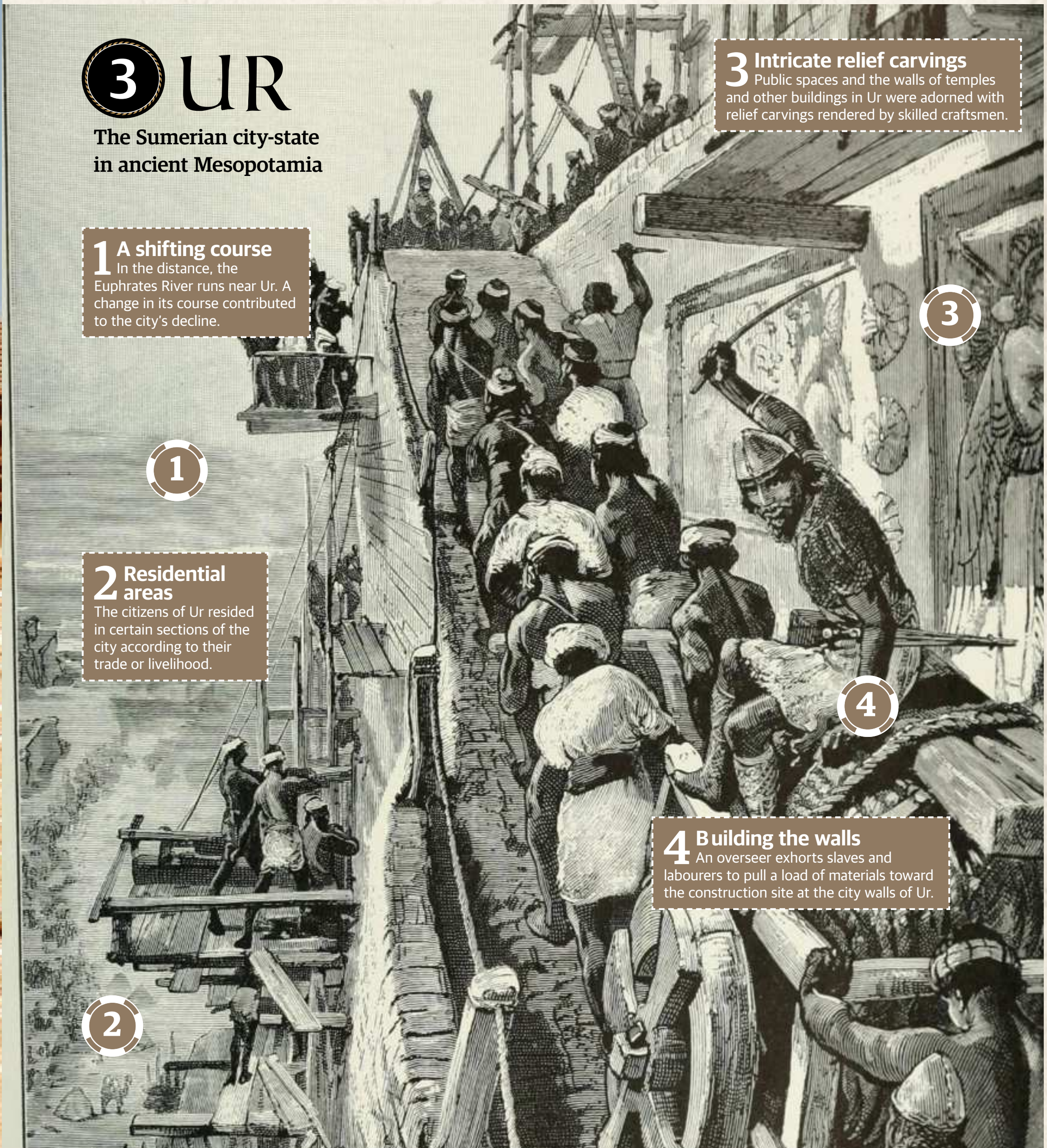
Remnants of an early Harappan settlement have been located beneath more recent remains in the lower town, and evidence of at least nine building phases have been discovered. The large citadel mound stretches 130 metres along its east-west axis, and 260 metres north to south. Traces of an extensive brick wall around the lower town have also been unearthed, and a cemetery has been discovered a short distance west of the town. Another notable attribute of the Kalibangan site is the presence of fire altars that suggest ritual use in the worship of the fire god, Murukan. At the height of its influence on the Indus Valley Civilisation, Kalibangan is believed to have served as a provincial capital.

The site was discovered by Italian scientist Luigi Pio Tessitori during his research on ancient Indian texts in the early 20th century, and he consulted with Sir John Marshall, director general of the Archaeological Survey of India. Extensive excavations were conducted during the 1960s. A report of the findings was published in 2003.

The western mound of the extensively excavated ruins at Kalibangan is known as the Citadel

③ UR

The Sumerian city-state in ancient Mesopotamia



1 A shifting course In the distance, the Euphrates River runs near Ur. A change in its course contributed to the city's decline.

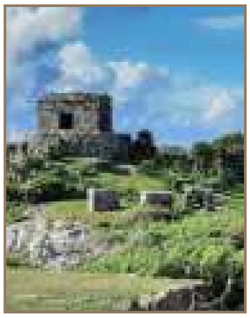
2 Residential areas The citizens of Ur resided in certain sections of the city according to their trade or livelihood.

3 Intricate relief carvings Public spaces and the walls of temples and other buildings in Ur were adorned with relief carvings rendered by skilled craftsmen.

4 Building the walls An overseer exhorts slaves and labourers to pull a load of materials toward the construction site at the city walls of Ur.

On the waterfront

Tulum
A Mayan walled city located along the shores of the Caribbean Sea, Tulum thrived commercially until European disease ravaged its population in the 15th century.

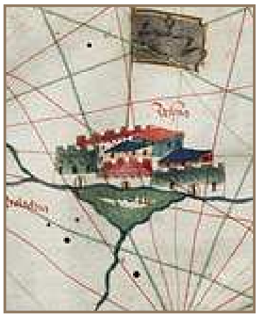


Pavlopetri
Pavlopetri was founded approximately 5,000 years ago on the coast of southern Laconia in Greece. The Mediterranean Sea claimed the settlement after the first of three earthquakes that devastated the town.

Abaskun
Abaskun flourished during the Middle Ages in the Hyrcania region of the Caspian Sea. Before the 14th century, the city was believed lost to rising water.

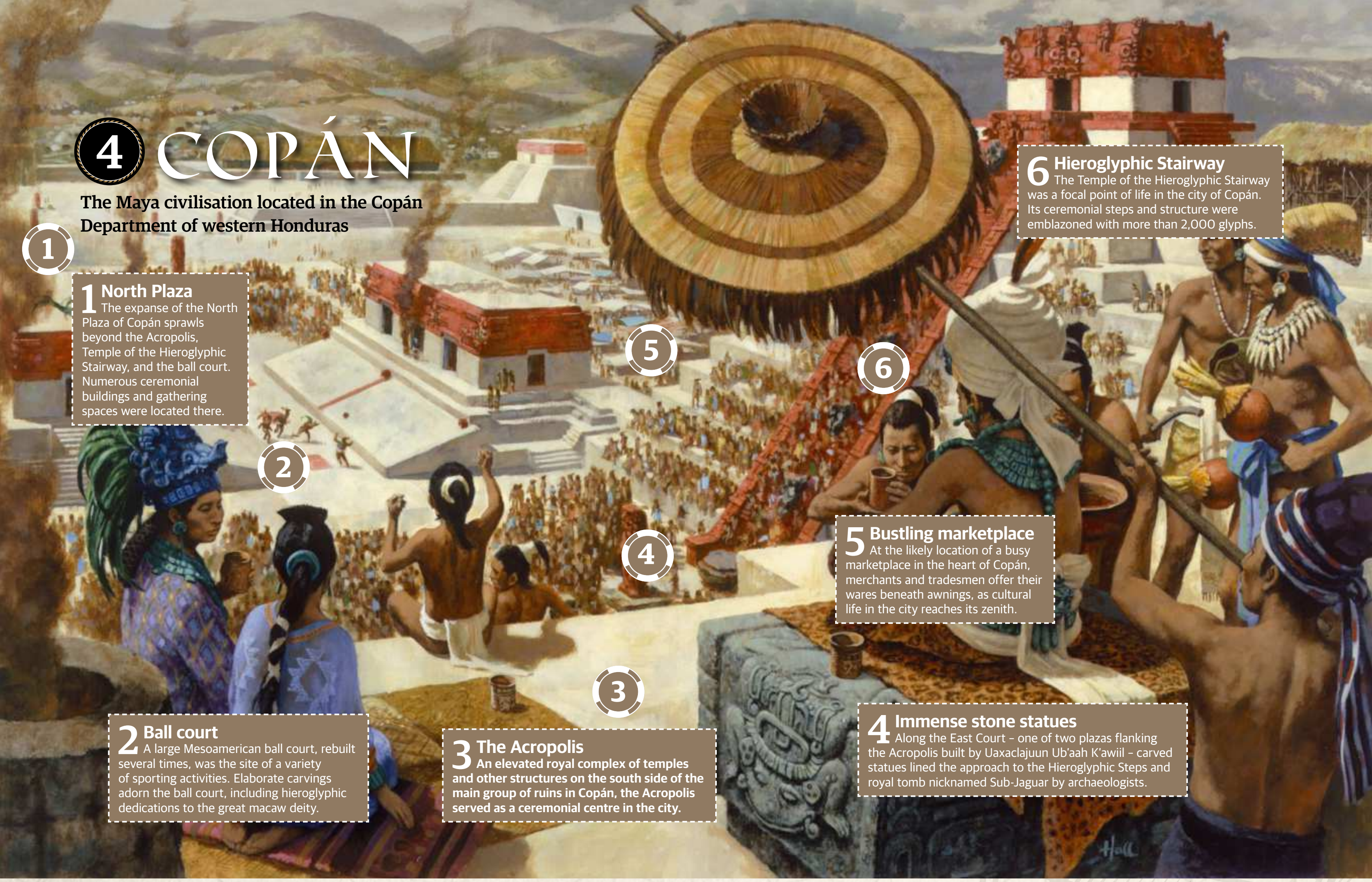
Brittenburg
Originally at the mouth of the Rhine River, the Brittenburg site is now in the North Sea off the Dutch coast. The settlement dates back to Roman times.

Vicina
A Genoese trading site on the Danube River during the 13th and 14th centuries, Vicina was ravaged by war, and its economy suffered dramatically.



4 COPÁN

The Maya civilisation located in the Copán Department of western Honduras



1 North Plaza
The expanse of the North Plaza of Copán sprawls beyond the Acropolis, Temple of the Hieroglyphic Stairway, and the ball court. Numerous ceremonial buildings and gathering spaces were located there.

2 Ball court
A large Mesoamerican ball court, rebuilt several times, was the site of a variety of sporting activities. Elaborate carvings adorn the ball court, including hieroglyphic dedications to the great macaw deity.

3 The Acropolis
An elevated royal complex of temples and other structures on the south side of the main group of ruins in Copán, the Acropolis served as a ceremonial centre in the city.

4 Immense stone statues
Along the East Court – one of two plazas flanking the Acropolis built by Uaxaclajuun Ub'aah K'awiil – carved statues lined the approach to the Hieroglyphic Steps and royal tomb nicknamed Sub-Jaguar by archaeologists.

5 Bustling marketplace
At the likely location of a busy marketplace in the heart of Copán, merchants and tradesmen offer their wares beneath awnings, as cultural life in the city reaches its zenith.

6 Hieroglyphic Stairway
The Temple of the Hieroglyphic Stairway was a focal point of life in the city of Copán. Its ceremonial steps and structure were emblazoned with more than 2,000 glyphs.

5 MYCENAE

The period of Greek history from 1600-1100 BCE is referred to as the Mycenaen, attesting to the importance of the city located 90 kilometres southwest of Athens. Mycenae is situated on a promontory in the northeastern Peloponnese, and its population reached 30,000 at the height of its glory around 1350 BCE. The fall of the city occurred during the decline of the Bronze Age, which included other population centres of southern Greece, probably burned at the hands of the Dorian people of the north. The first excavations of Mycenae took place in 1841, nearly 150 years after the identification of the ruins. Greek archaeologist Kyriakos Psistakis excavated the Lion Gate and performed restoration work. German scientist Heinrich Schliemann also worked in the city beginning in 1876.

6 OTRAR

Located on the plains of Central Asia in modern Kazakhstan, Otrar was once an important political and trade centre with a large oasis on the famed Silk Road. Founded prior to the 8th century, its history indeed dates back to the Persian Empire. In the mid-13th century, its governor, Inalchuq, enraged Genghis Khan by mistreating a Mongol diplomatic delegation. This led to a siege of the city and its capitulation to Mongol forces in 1219. Years of unrest followed the death of Genghis Khan, and the section of the Silk Road where Otrar was located fell into disuse. By the 18th century, the city's irrigation system had begun to fail, and the long history of the location began to fade into obscurity. Otrar became a ghost town, and archaeological exploration was undertaken in 1969.

7 CHICHEN ITZA

The most visited of Maya cities, Chichen Itza is located in the Yucatan, Mexico. Dating from the Late Classic through the Terminal Classic periods, 600-900 CE, Chichen Itza was one of the largest cities, and its ruins exhibit a variety of architectural styles. El Castillo, a Mesoamerican step pyramid built between the 9th and 12th centuries, dominates the site, and once served as a temple to the feathered serpent god, Kukulkan. The base measures more than 55 metres, and 365 steps rise 24 metres. The temple crowns the pyramid, adding another six metres in height. The north face of the pyramid is oriented to the annual sunsets on 20 May and 24 July. At the height of its influence, Chichen Itza was a significant economic, cultural and social location of the Maya civilisation. Its importance began to decline by 1250, but it was still a population centre at the time of the Spanish exploration. Friar Diego de Landa was among the first Europeans to describe El Castillo, visiting in 1566. Further descriptions were published in the 1840s, and in the 1920s archaeologists of the Carnegie Institute for Science began significant excavations at Chichen Itza.

Chechen Itza's forbidden chambers

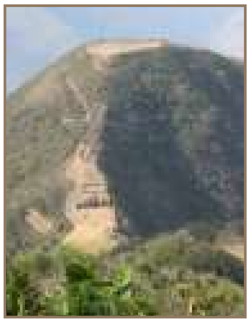
The National Institute of Anthropology and History, a department of the government of Mexico, has become increasingly concerned for the safety of visitors to Chechen Itza. In 2006, after a visitor fell to her death from El Castillo, the agency began prohibiting climbing on monuments and restricting access to internal chambers, including the interior throne room. Furthermore, sinkholes and subterranean limestone formations may be contributing to the instability of the ruins.

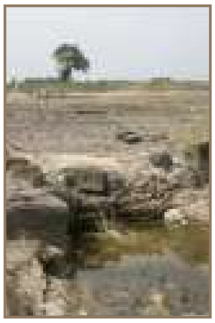
8 XANADU

Also known by the name Shangdu, the city of Xanadu was built in the mid 13th century as the capital of Kublai Khan's Yuan Dynasty before he relocated the seat of government to Zhongdu, modern Beijing. Xanadu then became his summer capital. Xanadu has been popularised in literature, most notably in the poetry of Samuel Taylor Coleridge. The city was visited by Marco Polo around 1275, and his description of its beauty and daily life brought attention in the West. In 1369, the Ming army occupied Xanadu and burned many of its structures as the last khan, Toghun Temur, vacated the area. The city was abandoned for hundreds of years. In 1872, Stephen Bushell, affiliated with the British consul in Beijing, visited the site. His reports contributed to the plunder of building materials that followed during the next century. A restoration effort was begun in 2002.

Dogs of war

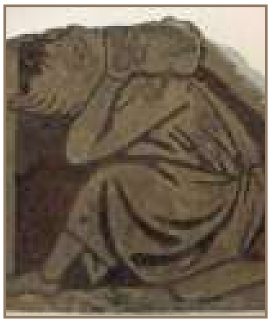
Choquequirao
An Incan city in southern Peru, the hilltop city of Choquequirao was one of the last native bastions against Spanish influence in the 16th century.

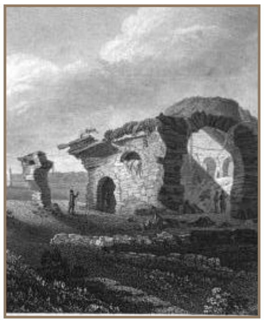




Sybaris
An ancient Greek city in Italy on the Gulf of Taranto, Sybaris was founded in 720 BCE and abandoned in 445 BCE amid fighting with the neighbouring town of Krotoniates.

Thérouanne
A French and Flemish town in the Pas-de-Calais founded in the 7th century, Thérouanne was captured by Holy Roman Emperor Charles V and levelled in 1513.





Bolghar
For 700 years Bolghar served at times as the capital of Volga Bulgaria. Threatened by the Mongols, the city was destroyed by the Russians in 1431.

Vilcabamba
Founded in Peru in 1539 by the Inca, Vilcabamba fell to the Spanish in 1572 and was razed. Its destruction ended Incan resistance to Spain.

⑨ RAKHIGARHI

Located northwest of Delhi in the Indian state of Haryana, the site of ancient Rakhigarhi dates to the pre-Indus Valley civilisation in 6500 BCE. Seven mounds mark the ruins of the city, each of them occupied at different times in the long history of the settlement. As recently as the year 2014, the discovery of additional mounds made Rakhingarhi the largest known Indus Valley civilisation site.

Numerous religious altars and other structures have been excavated at the site, and its cemetery has yielded the remains of numerous individuals. Tests to determine the ethnic origins of these people are currently underway, providing insight into the society of the region dating back over 4,500 years. The Rakhigarhi site is among the ten most threatened in Asia today as modern development has encroached and thieves have sold artefacts stolen from the excavations.

⑩ L'ANSE AUX MEADOWS

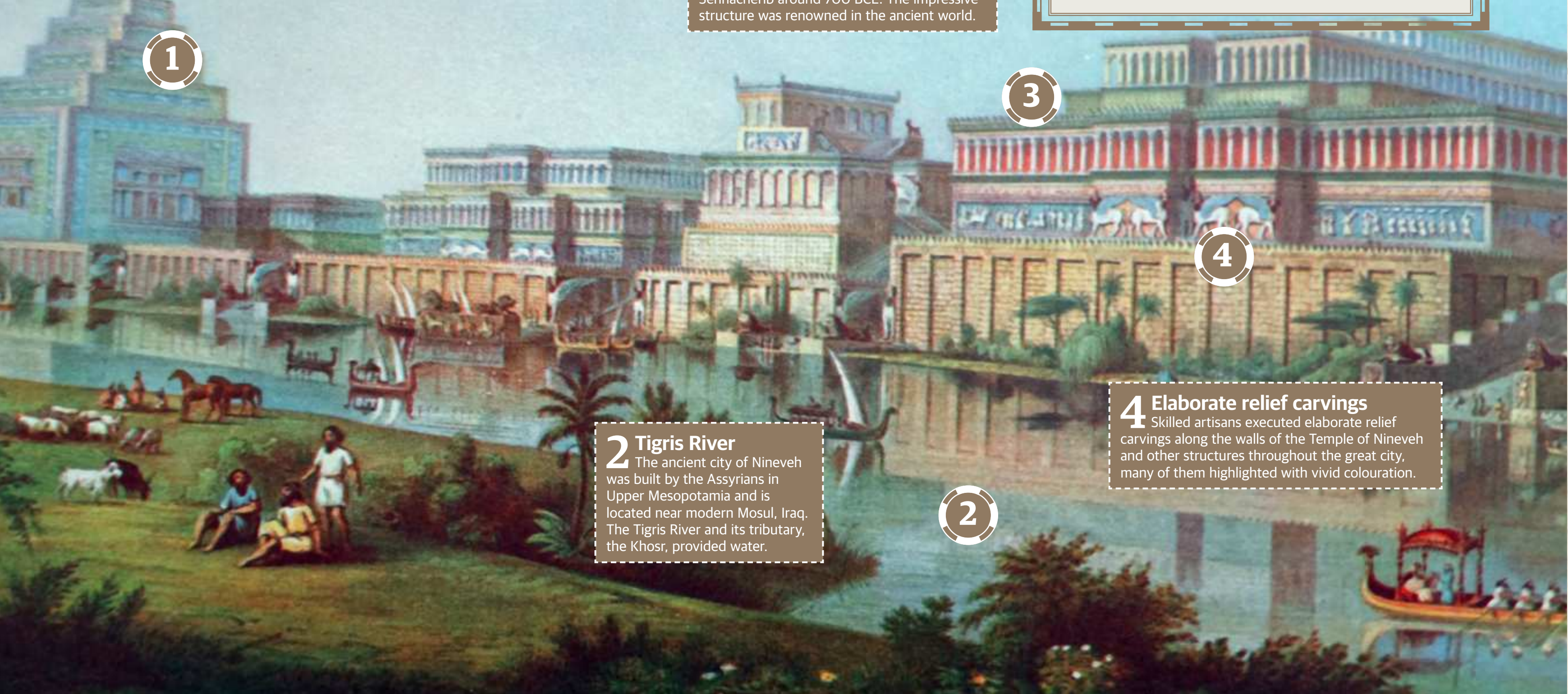
Located on the extreme northern tip of the island of Newfoundland, Canada, L'Anse aux Meadows is the only confirmed Viking settlement site in North America. It dates to around the year 1000 CE, and was discovered in 1960. During excavations that followed, the remains of eight buildings and numerous artefacts were unearthed.

⑪ NINEVEH

The ancient Assyrian city of Upper Mesopotamia

Along the watchtower

The imposing perimeter wall of Nineveh consists of stone standing six metres high and topped with brick rising another ten metres. Spaced at 18-metre intervals, the wall supports three-step merlons, or battlements. Numerous points of entry were constructed, and five of the major gates into the city have been excavated.



1 Great religious temples
Great religious temples such as this were constructed in the city of Nineveh to pay homage to a pantheon of Mesopotamian gods that related to nature and everyday living.

3 Palace of Nineveh
The Palace of Nineveh, known as the 'palace without rival', was constructed by Sennacherib around 700 BCE. The impressive structure was renowned in the ancient world.

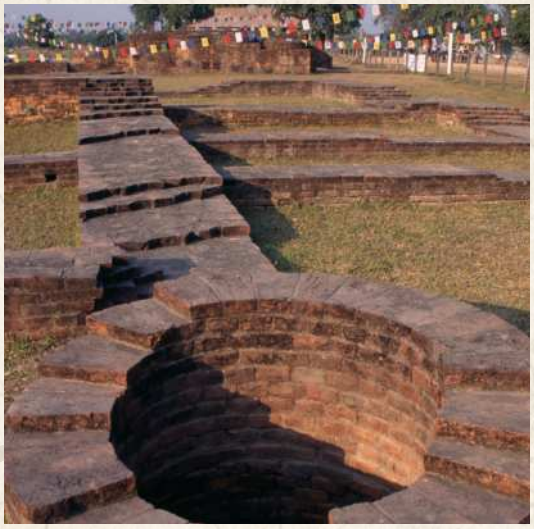
2 Tigris River
The ancient city of Nineveh was built by the Assyrians in Upper Mesopotamia and is located near modern Mosul, Iraq. The Tigris River and its tributary, the Khosr, provided water.

4 Elaborate relief carvings
Skilled artisans executed elaborate relief carvings along the walls of the Temple of Nineveh and other structures throughout the great city, many of them highlighted with vivid colouration.

⑫ LUMBINI

The ancient city of Lumbini, built in the modern Rupandehi District of Nepal, is a revered site of Buddhist pilgrimage. Tradition asserts it was in Lumbini in 562 BCE that Siddhartha Gautama was born. He went on to achieve enlightenment and became Lord Buddha, the founder of the Buddhist religion. Lumbini is home to the great Mayadevi Temple, which dates to the 3rd century BCE. Excavations at the temple were in progress as recently as 2013, and numerous other temples are being excavated and restored.

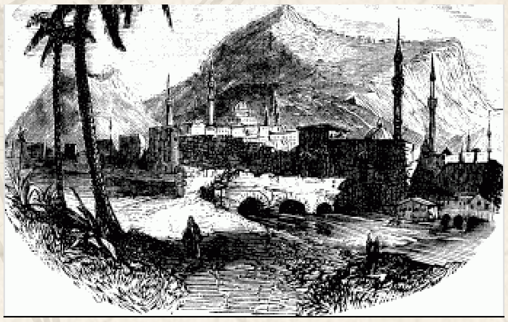
Modern archaeological attention increased with the discovery of a stone pillar at Rummindei in 1896, its inscription indicating the city's location and status as the birthplace of Buddha. Although the ruins had been located, their religious significance was not verified prior to that time.



⑬ ANTIOCH

Founded in the 4th century BCE by Seleucus I Nicator, a general who served under Alexander the Great, Antioch lies on the eastern side of the Orontes River near the modern city of Antakya, Turkey. Its proximity to the Silk Road, the spice trade routes, and the Persian Royal Road made Antioch a centre of commercial activity that grew to rival other great cities of the eastern Mediterranean.

Antioch was also a centre of early Christianity and is said to be the city where the term 'Christian' was first coined. During the reign of Caesar Augustus, its population grew to half a million. Changes in trade routes, continuing warfare and a series of earthquakes left the city in decline by the Middle Ages. Most of the ruins of the great city of Roman times are believed to be buried in the sediment of the Orontes, although remnants of its fortifications are visible.

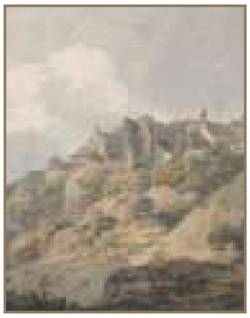


The digs at Antioch

During the 1930s, a group of museum representatives from Great Britain, France and the United States formed the Committee for the Excavation of Antioch and its Vicinity. Numerous mosaics and Roman baths were located, but major buildings remained elusive. Many of the mosaics date from the 4th and 5th centuries and once-decorated private homes.

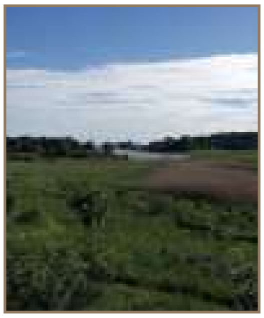
A change of seasons

Paestum
Changes in local drainage caused swamps to encroach on Paestum on the Tyrrhenean coast of Italy. Malaria probably played a role in its abandonment after 1100, too.



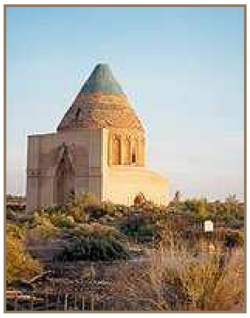
Old Wichelsea
Written accounts of Old Wichelsea date to the 12th century, before the East Sussex coastal town was washed into the sea around 1280.

Helike
In the winter of 373 BCE, an earthquake generated a tsunami that inundated the Greek city of Helike, located near the Corinthian Gulf.



Kaupang
Located on the Norwegian coast near Oslo Fjord, Kaupang was an important Viking commercial centre until the seas receded and it was no longer accessible by water routes.

Konye-Urgench
Founded around the 5th century BCE in what is now Turkmenistan, Konye-Urgench was abandoned in the 18th century after the natural redirection of the Amu-Darya River.

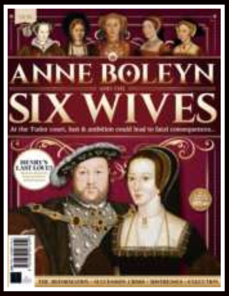


© Alamy, Getty Images, WikiCommons: Andreas Trepte, B_pilgrim, Carole Raddato, Daniel Schwen, Doron, Drekis, Eric Bronder, Nomu420, Maria Pia Bernasconi, ptyx, Popo le Chien

NEW
ALL ABOUT HISTORY
GREATEST EMPIRES
Chart the rise and fall of history's most powerful states
DISCOVER THE EMPIRE ON WHICH THE SUN NEVER SET
AZTECS • OTTOMAN • ABBASID

Discover how the greatest empires in history were forged

NEW
HISTORY OF WAR
KOREAN WAR
THE DRAMATIC STORY OF DECADES OF CONFLICT


ANNE BOLEYN AND THE SIX WIVES

NEW
STALIN
HITLER vs STALIN

NEW
HISTORY OF WAR
DUNKIRK
THE EVENT THAT SHAPED THE COURSE OF HISTORY
THE EVACUATION • KEY PLAYERS • THE AFTERMATH

NEW
History of MAGIC
SECRETS OF SORCERY
ANCIENT TRADITIONS • SPELLS & RITUALS • DIVINATION & GRIMOIRES

Explore the spellbinding world of sorcery, spells and shamanic trances

NEW
History's Greatest Mysteries
UNANSWERED, UNSOLVED AND UNEXPLAINED

NEW
ALL ABOUT HISTORY ANNUAL

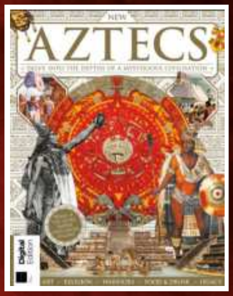
HENRY VIII
Inside the royal court of the unexpected Tudor king

NEW
HISTORY
US PRESIDENTS

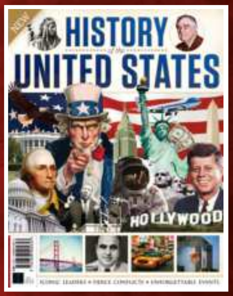
NEW
HISTORY OF WAR
HITLER AT WAR
EXPLORE THE RISE AND FALL OF HISTORY'S GREATEST MONSTER
BATTLES • STRATEGIC MISTAKES

Chart the rise of Hitler and learn how he set Germany on the path to war

NEW
ASSASSINATIONS
THE MURDERS, PLOTS AND CONSPIRACIES THAT CHANGED HISTORY
25



NEW
HISTORY
TUDORS


NEW
HISTORY of the UNITED STATES
HOLLYWOOD

✓ Get great savings when you buy direct from us

✓ 1000s of great titles, many not available anywhere else

✓ World-wide delivery and super-safe ordering

US MILITARY'S
GREATEST LEADERS

DEFINING BATTLES OF
WORLD WAR II
THE KEY CONFLICTS AND OPERATIONS FROM HISTORY'S BLOODIEST WAR

HISTORY OF
Folklore, Fairytales & Monsters

WARS of the ROSES

EVERYTHING YOU NEED TO KNOW ABOUT
THE AMERICAN CIVIL WAR

HOLY ROMAN EMPIRE

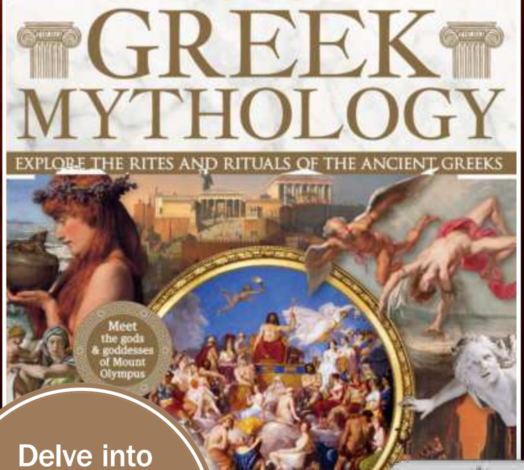
What if...
Alternative History

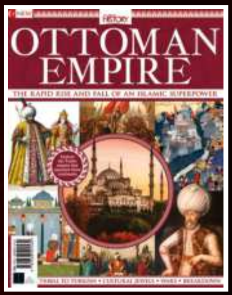
STEP BACK IN TIME WITH OUR HISTORY TITLES

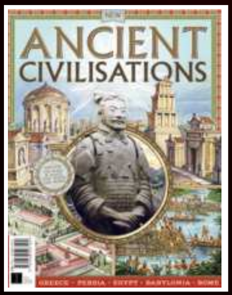
Immerse yourself in a world of emperors, pioneers, conquerors and legends and discover the events that shaped humankind

HISTORY of GHOSTS

HISTORY OF NASA


GREEK MYTHOLOGY
EXPLORE THE RITES AND RITUALS OF THE ANCIENT GREEKS
Meet the gods & goddesses of Mount Olympus


OTTOMAN EMPIRE


ANCIENT CIVILISATIONS

BOOK OF SPELLS

Delve into the myths and monsters of ancient Greece

Follow us on Instagram @futurebookazines

FUTURE

www.magazinesdirect.com

Magazines, back issues & bookazines.

SUBSCRIBE &
SAVE UP TO 61%

Delivered direct to your door
or straight to your device

CLASSIC ROCK
HOW IT WORKS
ULTIMATE QUIZ SPECIAL
FourFourTwo
TOTAL FILM
HISTORY
EDGE
T3
UPGRADE YOUR HOME TECH
Digital Camera
SHOOT SHARPER SHOTS!

Choose from over 80 magazines and make great savings off the store price!

Binders, books and back issues also available

Simply visit www.magazinesdirect.com

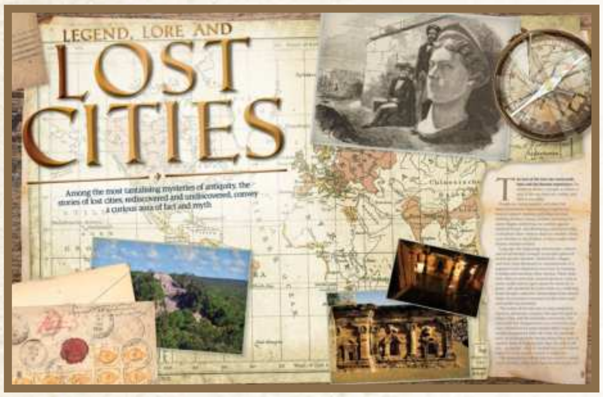
✓ No hidden costs Shipping included in all prices We deliver to over 100 countries Secure online payment

FUTURE

magazinesdirect.com
Official Magazine Subscription Store

Ancient History's
LOST CITIES

Uncover the elusive civilisations that were lost to time



How cities become lost

Discover the circumstances that cause places to become destroyed or abandoned

Step back in time

See how bygone civilisations lived, by examining art, sculptures and more

Explore today's ruins

Learn all about how forgotten cities are rediscovered and what they look like today

TOUR OF BABYLON

Illustrative maps

Find your way around the cities with detailed maps that showcase key sites

BOOKAZINE

TROY ◆ CARTHAGE ◆ PERSEPOLIS ◆ GREAT ZIMBABWE ◆ PALENQUE